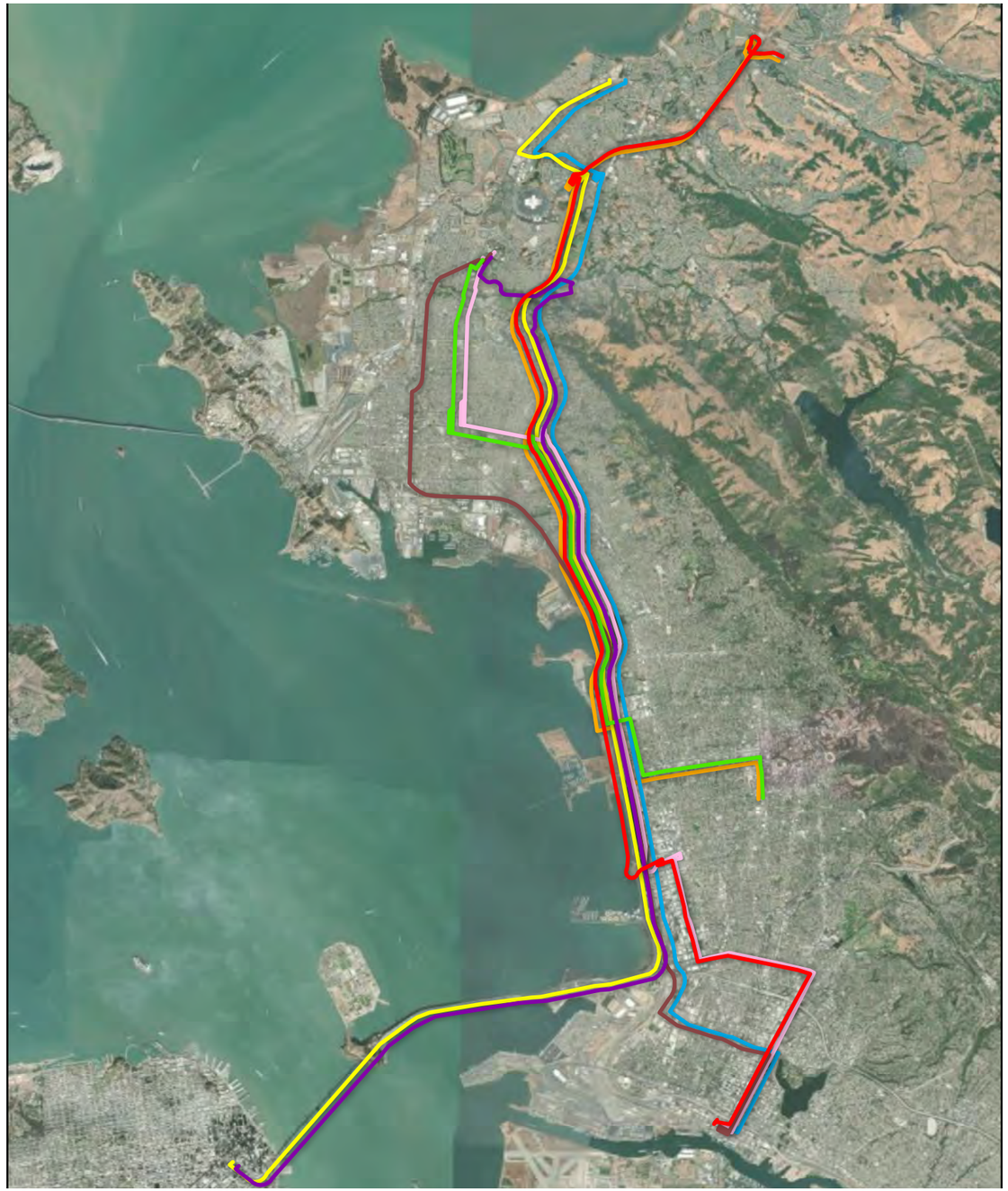
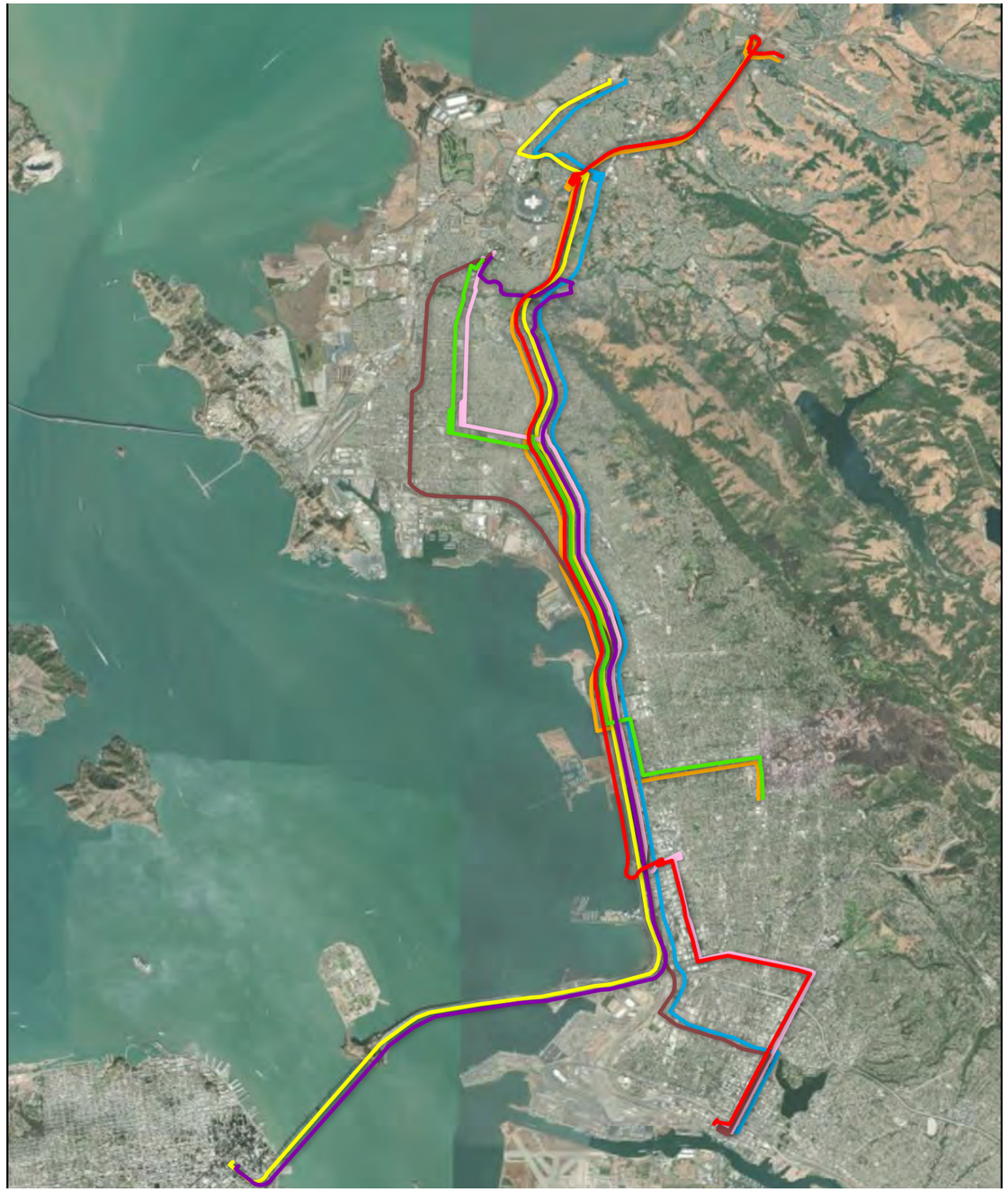
APPENDICES

A. Analytical Methodologies
B. Background Studies and Travel Data Technical Memorandum
C. Outreach Summaries and Materials
D. Proposed Stop and Intersection Improvements
E. Conceptual Layouts and Cost Estimates
F. Bicycle/Pedestrian Gaps Analysis
G. Operations and Maintenance Memorandum
H. Financial Plan



A.

ANALYTICAL METHODOLOGIES



A. ANALYTICAL METHODOLOGIES

Transit Market Size Methodology

Market size is defined as the number of people who travel between the origin and destination areas for their work commute. This represents the current universe of potential users of the transit service. This total was developed using a product of the U.S. Census, the Longitudinal Employer Household Dynamics program (LEHD) using 2017 data. This database reports places of residence of employment for employed persons age 16 and older. Because resolution of the survey is available at the census block level, it permits users of the data to estimate how many people live in one geographic area and work in another. People were considered to be likely users of transit if they lived within the "walkshed" (a distance that one might reasonably walk) of an on-street bus stop, or within the "driveshed" of a transit center or mobility hub. For the purposes of this report, the bus stop walkshed was assumed to be 0.25 miles and the transit center/mobility hub driveshed was 2.5 miles. Both figures were based on existing research regarding transit use in the Bay Area. While it is possible to bike to transit, allowing for a larger number of people to access a stop, few people are likely to choose to lock up a bicycle at an on-street stop for the duration of the work day. Anyone choosing to bike to a transit center or mobility hub, where secure bicycle parking is proposed, would have been captured in the driveshed analysis.

It should be noted that market size, as described above, is not intended to be an estimate of the number of people who would ride the proposed express service after implementation and should not be used as a substitute for such a ridership projection. The decision for any individual to ride transit is complicated and may depend on a complex interaction of a variety of factors, such as income, age, auto ownership, perceptions of transit, price sensitivity, cost and availability of parking, and travel time.

The methodology for calculating market size does not account for many of the factors listed above. Therefore, while market size is correlated to ridership, the magnitude of that correlation may vary based on a variety of factors. While market size might not change over time, other factors which are known to influence mode choice may, such as increasing auto congestion, priority granted to transit vehicles, transit fares, additional pedestrian/bicycle infrastructure, and the price of tolls/parking. If the quality of auto-based commutes remains the same or declines while the quality of transit commutes improves, some people are likely to switch modes.

Because of the uncertainty regarding conditions that will determine future ridership and the lack of travel demand modeling that would effectively forecast ridership, transit market size was used in the prioritization methodology for this project.

Transit Market Size Analysis Assumptions and Limitations

Market size estimates are based on several assumptions. Those assumptions are detailed below:

LEHD data used to develop the market size was collected in 2017. This represents a snapshot of the number of people who currently live and work along the proposed route alignment, and not a prediction of the number at any future date. Many factors might cause these totals to be higher or lower in the future. Denser residential uses in West County and growing employment in Alameda County would lead to higher market sizes. On the other hand, additional employment being located in West County or infill housing in Alameda County might cause a reduction in market size as current long-distance commuters change jobs or move houses to live closer to their place of work. Lastly, all origin routes assume the development of the proposed mobility hubs, allowing potential riders who live outside of walking distance to an on-street stop to still use the service. If the mobility hubs proposed for each route are not brought into operation, the market size for each route would be smaller.

LEHD data has inherent limitations when used for these purposes. Some of the limitations below likely result in an overstatement of market size, others in an understatement, and other have a mixed effect.

The following factors are likely to result in the market size being overstated.

- LEHD data does not distinguish between employees who commute during the peak hour and those who commute at off-peak times, including many employed in service sector work. The proposed peak hour, peak direction-only service would likely not serve the latter group of commuters.
- Some people must bring tools or specialized equipment to their place of work or require their vehicle to travel between jobsites during the workday. Beyond being able to carry on a bag, briefcase, or backpack, express bus service would not be suitable for the movement of heavy of bulky items.

The following factors result in the market size being understated:

- As described above, market size is defined by people who live and work within a short walk of origin and destination stops (the "walkshed"). While this boundary is based in research and aims to capture the bulk of people who walk to and from transit, it fails to capture those who are willing and able to work longer distances or may make use of other mobility-enhancing devices to extend their range, either to the origin bus stop or from the destination. All four of the proposed express bus destinations (Oakland, Emeryville, Berkeley, and San Francisco) are home to a significant (and increasing) amount of bicycle infrastructure, and several of the destination stops are located near Bay Wheels bikeshare stations. All express buses purchased for proposed service are recommended to have bike racks allowing a limited number of riders to bring a bicycle with them. Additionally, improving battery technology has led to an uptake in small electric devices such as powered skateboards, scooters, and the like, many of which could may easily be carried aboard an express bus and stowed overhead.
- Students who commute for school are not counted by the LEHD, which surveys employees about their place of residence and place of work. Accounting for students, particularly considering destinations served are near University of California and Laney College, would increase market size.
- A significant amount of peak-hour travel is undertaken by people not commuting to a job, but traveling for other reasons such as doctor's visits, seeing family, visiting museums, etc. (according to Caltrain's 2016 rider survey, thirteen percent of surveyed peak-hour riders were traveling for non-work reasons). While the proposed express bus service may not be the ideal option for these trips given its limited return hours, it could serve a purpose for transit-dependent individuals. All origins are reachable via existing transit with all-day service, so an individual would be able to ride the proposed express bus, likely shortening their trip, and later return on a combination of BART and local bus service.
- Market size is based on 2017 population and employment. The Bay Area is experiencing significant growth in employment and future plans have continued growth in population. Bay Area growth will both increase the market size over time, as well as lead to increasing congestion that will further enhance the desire for transit.

The following factors result in a mixed effect on the route market size:

- LEHD data reports the census block on which the workplace address is located. While this is frequently the location at which an employee is required to report for work, it may not be (such as in the case of a construction worker, security guard, or delivery driver). While this factor may overcount market size in some cases, it is equally likely to undercount it (if people whose workplace address is elsewhere but actually reports to work within the analyzed walkshed).

Travel Time Estimate Methodology

A set of travel time estimates was developed to allow comparison between the proposed route and existing options for commuters. For each route, a set of origin-destination (O-D) pairs was chosen, aiming to capture transit centers and mobility hubs in West County, and job centers in Alameda County and San Francisco. For each origin-destination pair travel time estimates were developed for commuters traveling by automobile, existing transit, and the proposed express bus service. The methodology for calculating each is described here.

Existing Auto

Travel times estimates were derived using the directions app Waze. For each O-D pair, an estimate was recorded for the most direct route departing at 7:30 A.M. on a Wednesday with no substantial traffic disruptions. Estimates were only made in the southbound direction of the A.M. commute. Note that these estimates do not account for the time it would take a driver to park their vehicle, which can be substantial and can vary significantly day-to-day. These estimates therefore represent a best-case scenario for driving time.

Existing Transit

Travel time estimates were derived using Google Maps. For each O-D pair, estimates were recorded for transit trips leaving after 7:00 A.M. and before 8:00 A.M. To account for the variability of transit travel times (which may differ because of longer or shorter connection times when transferring between transit vehicles, e.g. from WestCAT JPX bus route to BART at El Cerrito del Norte Station), an average was taken of all recommended routes. For each transfer required, 10 minutes were added to the total travel time to account the possibility of missed transfers and for higher total fare cost of the trip. Estimates were only made in the southbound direction for the A.M. commute.

Proposed Transit

Travel time estimates were developed for the proposed express bus service. This was done by separating each route into constituent segments (e.g. San Pablo Avenue from Tara Hills Drive to Richmond Parkway Transit Center) and then obtaining an estimate of travel time for each using the Waze app. All estimates assume a departure time of 7:30 A.M. on a Wednesday. These segment travel times were augmented by estimated dwell time for local stops and transit centers/mobility hubs. Each local stop along an alignment was assumed to incur a 30-second travel time penalty, and each transit center/mobility hub that requires a deviation incurred a two-minute travel time penalty. All freeway segments assume the use carpool lanes (an option in Waze) where available. After an estimate was derived for each segment in the proposed express bus network, those segments were summed based on each route's alignment. None of the travel-time-improving capital improvements proposed in Chapter 6 were assumed in these calculations – if the recommended improvements were implemented, travel times would likely be lower than estimated here.

Travel Time Estimate Assumptions

Travel time estimates do not incorporate any assumptions about future congestion levels on the I-80 corridor. Though it is highly likely that the Bay Area will continue to grow in population, it is not known when each of the express routes would be brought into service and when various transportation projects will be implemented, and is thus hard to link to County-developed travel demand models. Changes in land use, bridge tolls, or the implementation of paid express lanes would all affect travel time. Rather than attempt to incorporate some or all of these contingencies, the travel time estimates were based in current conditions.

Route Prioritization

Route were prioritized by being assigned a "Competitiveness Score," a function of (1) the route's potential market size, (2) the travel time improvement between existing transit and proposed express bus service, and (3) whether a route ended in San Francisco.

Routes were ranked by the following equation.

$CS = MS (1 + TTI/2) * SF$

Competitiveness Score (CS)

The Competitiveness Score is a function of market size, travel time, and destination. Research on the elasticity of transit ridership suggests that, on average, for everyone 1% decrease in travel time, ridership can be expected to increase by 0.5%. Market size acts as a baseline and is multiplied by 1 plus half the transit travel time improvement. Routes connecting West County to San Francisco are scaled up by an additional factor.

2017 Market Size (MS)

To estimate potential market size, the U.S Census's 2017 Longitudinal Employer-Household Dynamics (LEHD) data was used to determine the number of people who live within walking or driving distance from origin stops (in West County) and work within walking distance of destination stops (in Berkeley, Emeryville, Oakland, and San Francisco).

Existing Transit Travel Time

To determine the difference between existing transit travel times and those with the proposed service, a series of locations along each route was selected for both origin alignments and destination alignments. Google Maps was used to determine the travel times between each origin-destination pair using existing transit.

Proposed Express Bus Travel Time

Express bus travel time was determined by using Waze to estimate the travel time for the various segments of each route, assuming typical levels of traffic at 7:30 a.m. Travel times were adjusted to account for dwell time.

Average Travel Time Improvement (TTI)

A percent improvement was calculated for each origin-destination pair. The travel time improvement for each pair on the route was averaged to obtain a single average travel time improvement percentage for each route.

San Francisco Factor (SF)

When choosing whether to commute via transit or by car, the marginal cost of a trip plays a large role, both in time costs (congestion, time spent looking for parking) and financial costs (tolls, parking fees). When driving feels free or cheap, people will be more likely to travel by car, all else being equal. To account for the presence of the San Francisco-Oakland Bay Bridge toll as well as the added difficulty and cost of parking in San Francisco relative to the East Bay, an additional factor of 1.33 was included for routes traveling between West County and San Francisco. This factor was derived based on existing modal choices for trips between West County and San Francisco and between West County and Alameda County.

Equity Analysis

To determine whether the proposed express bus service would be serving a representative population of West Contra Costa County, an analysis was conducted to compare those living within the walkshed area of proposed routes with the entire study area.

Population Characteristics

The service population was compared to the wider West County population on the following bases:

- Low- or Moderate-Income individuals, as defined by U.S. Department of Housing and Urban Development Community Development Blog Grant (CDBG) Program (ACS 5-Year 2011-2015 Summary Data). As defined by this program, low-income individuals are those that live in households making less than 50% of the area median income (AMI). Moderate-income individuals are those that live in households making between 50% and 80% AMI.
- Minority Individuals, defined here as Hispanic or Latino individuals or non-Hispanic or Latino individuals who identified as a race other than "White alone" (ACS 5-Year 2013-2017)
- Carless Households, defined as households with no vehicle available (ACS 5-Year 2013-2017)

Analysis Area

A GIS analysis was conducted to estimate the number of people or households in each group that reside within 0.5 miles of the origin side of each route (i.e. the part of the alignment in West County). The walkshed of 0.5 miles represents a reasonable distance for walk or bike access to the transit service. Additional users are likely to access the service via bike, car, or other mode, but are not considered for the purpose of this analysis. Routes were grouped by those proposed for the near-term (Routes 2, 4, 6, and 7) and all routes (1-8). The proposed near-term routes would serve the following existing transit centers and corridors:

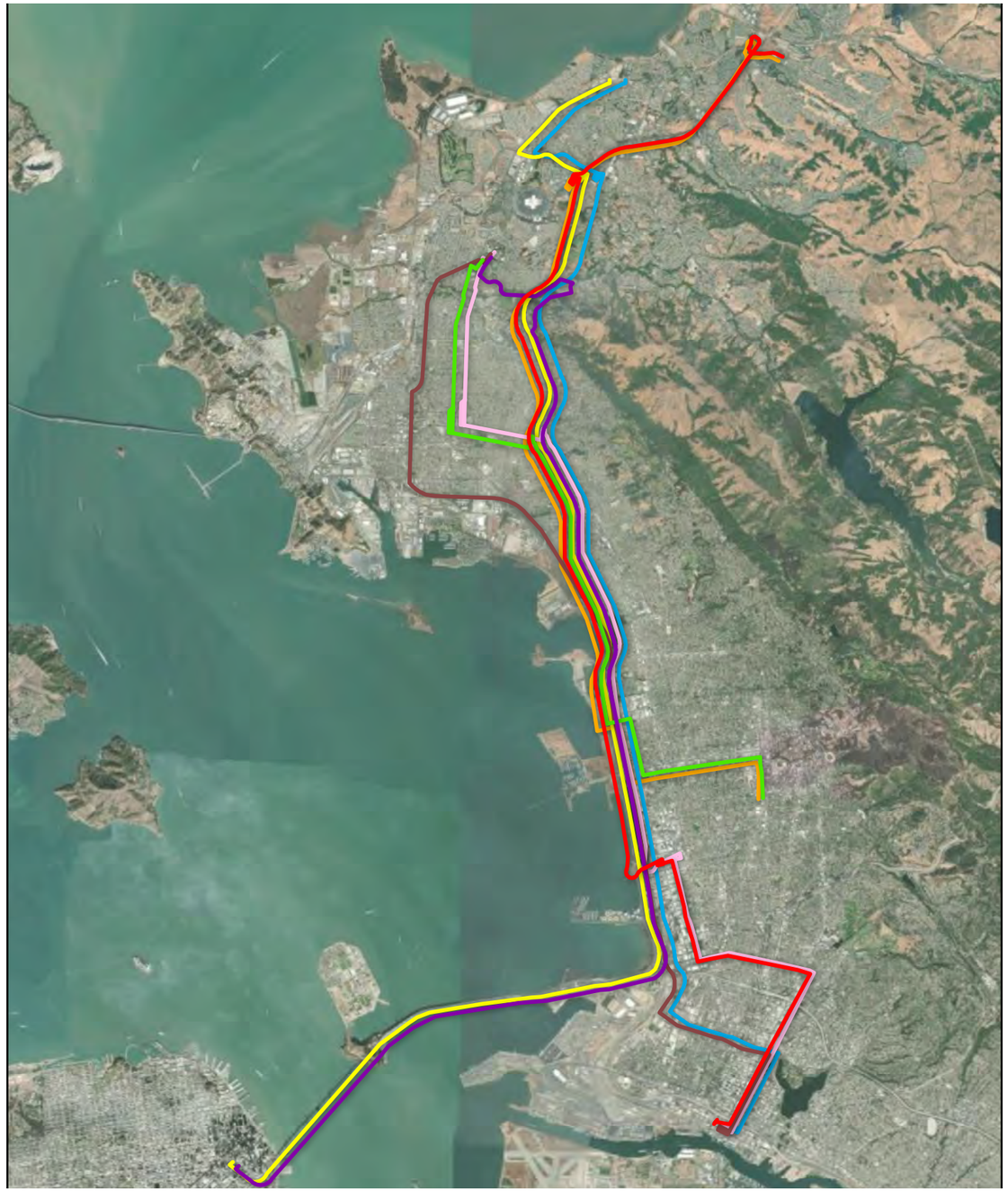
- Hercules Transit Center
- Richmond Parkway Transit Center
- San Pablo Avenue/Richmond Parkway between Pinole Shores Drive and I-80
- San Pablo Avenue/23rd Street/Macdonald Avenue between Rumrill Boulevard and I-80

Due to the significant overlap between the origin sides of the near-term and medium/long-term routes, the only additional corridor in West County served by one of the eight proposed routes, but not served by a near-term route, would be the following:

- Rumrill Boulevard/13th Street/Harbour Way between San Pablo Avenue and Wright Avenue

B.

BACKGROUND STUDIES AND TRAVEL DATA TECHNICAL MEMORANDUM



MEMORANDUM - DRAFT

To: Leah Greenblat, Project Manager
WCCTAC

From: Adam Dankberg, P.E.
Kimley-Horn and Associates, Inc.

Re: **Background Studies and Travel Data Technical Memorandum, WCCTAC Express Bus Implementation Plan**

Date: October 8, 2018

1 INTRODUCTION

As part of the first phase of the West Contra Costa Transportation Advisory Committee (WCCTAC) Express Bus Implementation Plan, Kimley-Horn has conducted a review of existing conditions as they relate to express bus service opportunities. This includes the following:

- Review of previous studies and planning work which may inform opportunities to expand express bus service in West Contra Costa County
- Documentation of existing and planned transit services in the study area
- Demographic characteristics of the study population
- Analysis of existing travel patterns in the study area

This memorandum serves to document this analysis, and will be used to support the development of draft route and stop locations as part of Task 3.2 of this project.

1.1 Study Area

The study area for this Plan is western Contra Costa County (West County); this area is shown in Figure 1.

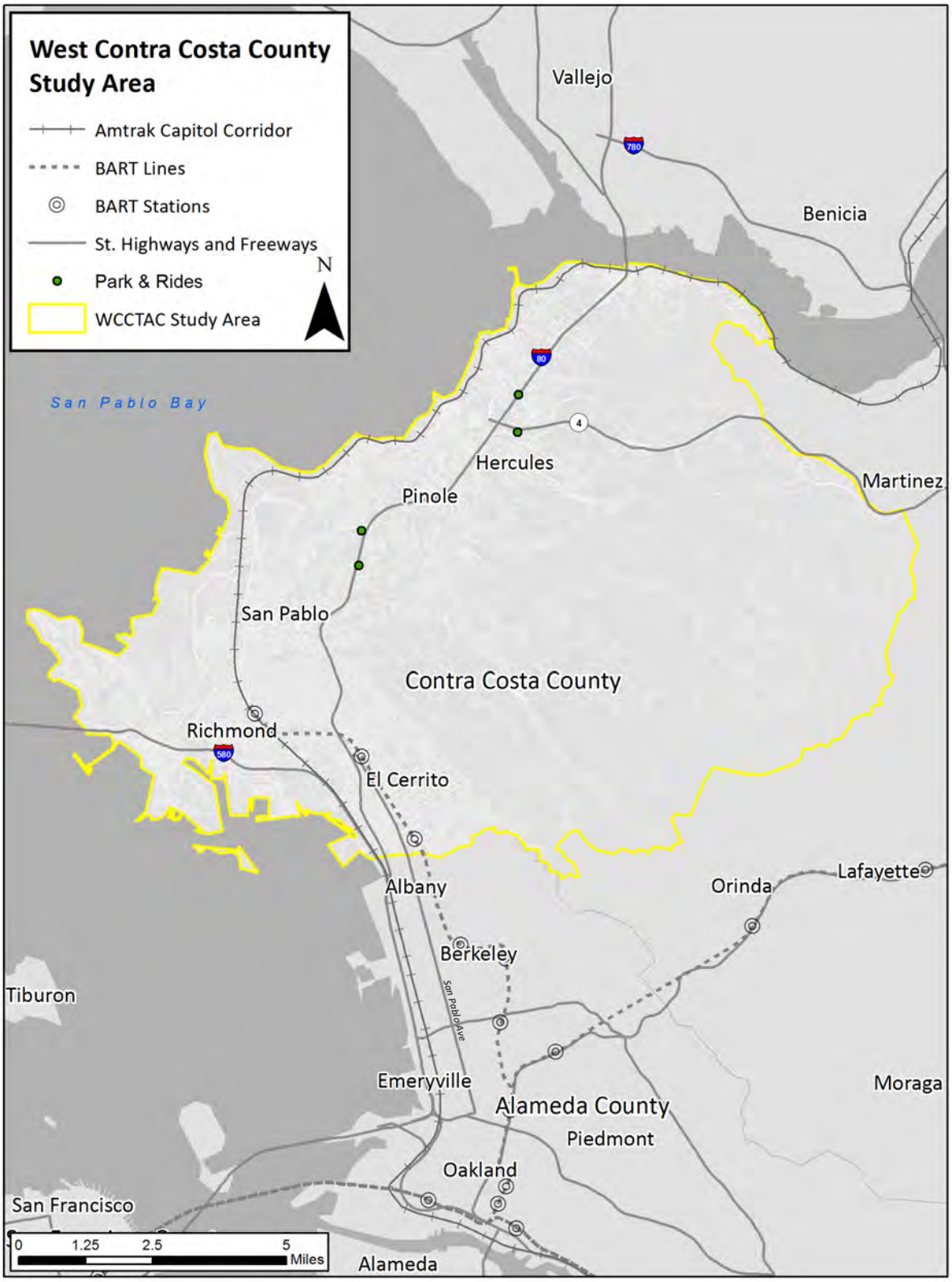


Figure 1: Study Area

2 PREVIOUS STUDIES AND PLANNING WORK

Kimley-Horn reviewed planning studies and other work completed in the study area to develop an understanding of the context in which this study is being conducted. Relevant findings and recommendations from these works are summarized in the following section.

2.1 West Contra Costa County High Capacity Transit Study

In 2015-2017, WCCTAC performed a High Capacity Transit (HCT) Study to evaluate multi-modal options to enhance transit connectivity and accessibility and to plan for future growth. The HCT study served to set the framework for this Express Bus Study. The goals of the HCT study included improving the frequency, reliability, and equity of transit services. The study focused on initially five travel corridors within West County: the I-80 and I-580 freeway corridors, the major north-south spines of San Pablo Avenue and 23rd Street, and the Union Pacific Railroad alignment extending north from the Richmond BART station. Various high capacity modal alternatives for these corridors, including associated capital improvement and service scenarios, were considered. (Expanded ferry service from the Hercules area across the bay to San Francisco was another proposed travel corridor initially identified but not an alternative included for detailed evaluation in the HCT Study. It is the subject of other regional transit improvement studies.)

After a series of outreach efforts and refinement and evaluation of a broad range of alternatives, five alternatives were chosen for further refinement and evaluation and ultimately included in the final report.

The five alternatives included:

1) Express Bus on I-80;
2) San Pablo Avenue/Macdonald Avenue BRT;
3) 23rd Street BRT;
4) UPRR Commuter Rail (short + mid-range options); and
5) BART Extension from Richmond.

The final report provided direction on next steps for each of the alternatives as well as provided information on estimated ridership and costs for each alternative.

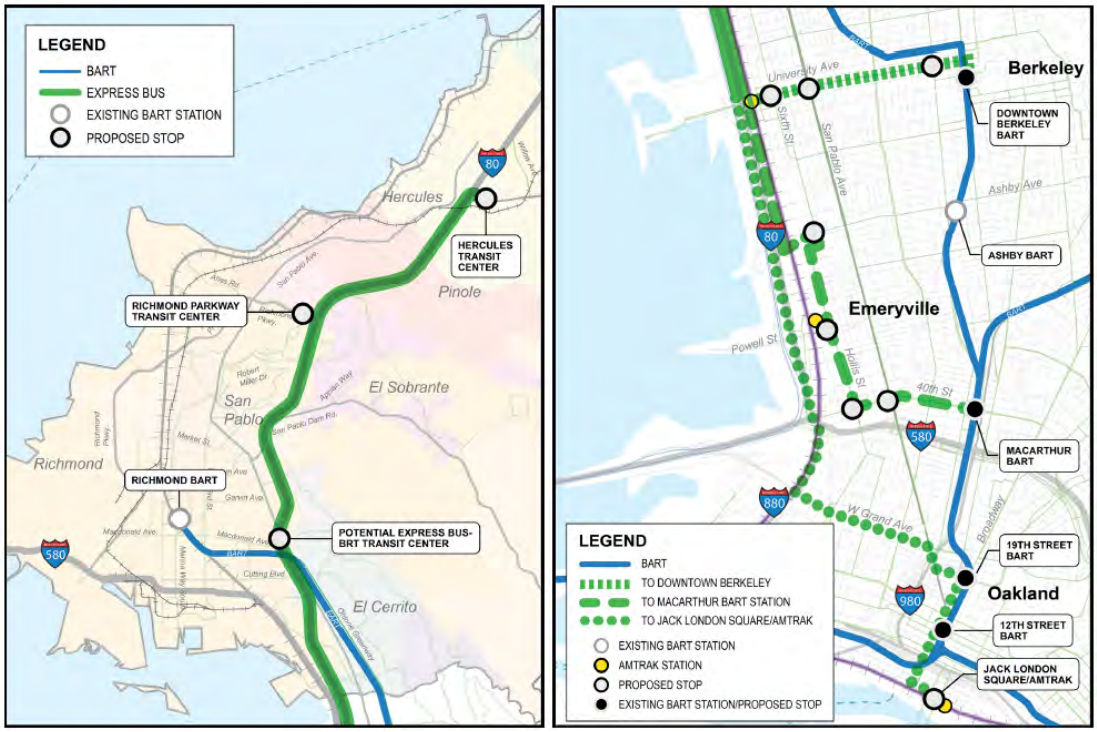
Alternative 1: Express Bus on I-80 provided recommendations for an express, freeway-based service on I-80 that would operate from the Hercules Transit Center to Berkeley, Emeryville, and Oakland. The alternative would also increase service frequency to San Francisco (e.g., on the WestCAT Lynx and/or AC Transit Transbay Line L). In West County, the proposed service would have additional stops at the Richmond Parkway Transit Center and a potential I-80/Macdonald Avenue Transit Center (see Figure 2). The study recommended longer term park and ride circulation and freeway access improvements, including restricted ramps that would make it easier for buses to move in and out of the high occupancy vehicle (HOV) lanes. Proposed bus routes in Berkeley, Emeryville, and Oakland are shown in Figure 2. Proposed park-and-ride and freeway ramp improvements are shown in Figure 3 and Figure 4.

For this alternative, the study projected ridership would increase to over 1,000 weekday daily boardings by 2020, and over 1,500 boardings by 2040. The associated projected costs were broken down by how soon elements of the alternative could be incrementally implemented: short-term (less than 5 years); medium-term (5 to 15 years); and long-term projections (over 15 years). The details of the elements and costs are shown in Figure 5.

A phased implementation approach was suggested for serving travel to and from Berkeley, Emeryville, and Oakland. Expanding direct bus service to these areas was determined to be a viable, low-cost option that can be implemented easily. Given congestion along I-80, a high functioning bus lane on the freeway would allow for effective express bus service at a relatively low cost per rider. In addition to enhancing existing express bus service to San Francisco, introducing new fast and direct service to East Bay cities in Alameda County would have immediate benefits for many West County commuters to these areas.

Alternative 1 was recommended for implementation in the near term and provides the foundation for this study.

Figure 2: WCCTAC HCT Study Express Bus Recommended Service



Source: West Contra Costa High Capacity Transit Study (2017)

Figure 3: Proposed Ramp Improvements at Hercules Transit Center (West Contra Costa High Capacity Transit Study, 2017)

Figure 4: Proposed Ramp Improvements at Richmond Parkway Transit Center (West Contra Costa High Capacity Transit Study, 2017)

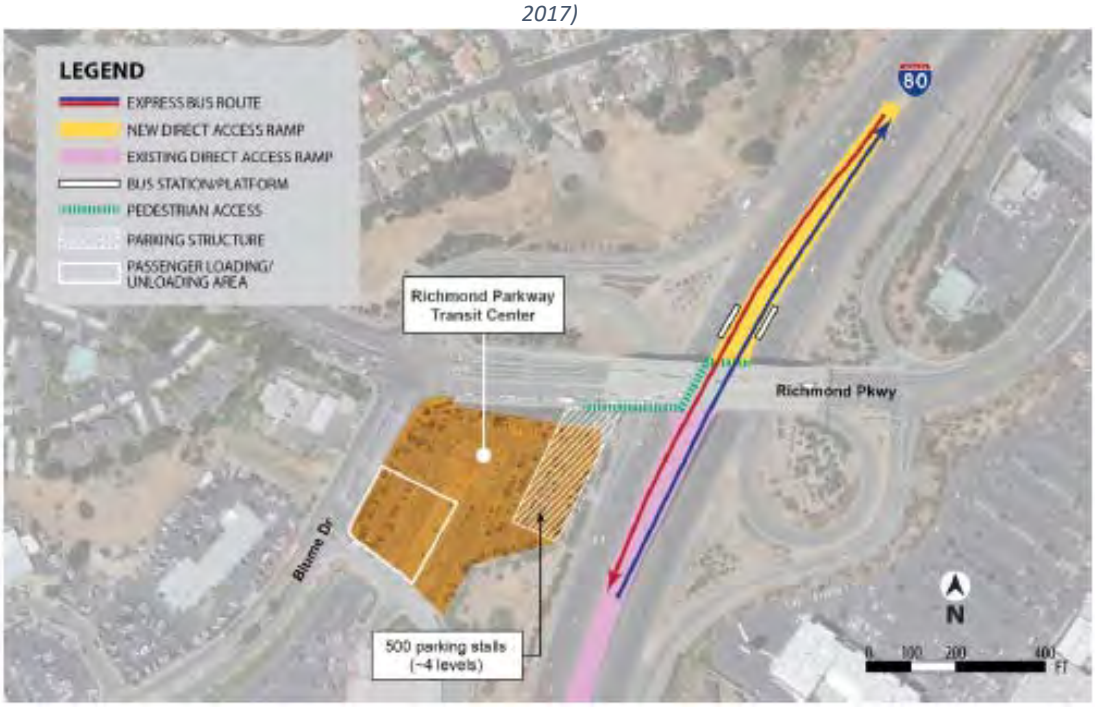


Figure 5: HCT Express Bus Corridor Implementation Costs

Time Horizon	Capital Cost (2017 $)
Short-term	**$11 m**
Increase existing bus frequency on WestCAT Express and Transbay routes	
New service to Berkeley, Oakland, Emeryville	
Transit priority improvements, such as signal priority and queue jumps	
Medium-term	**$90 m**
Bus stop improvements – Berkley, Emeryville, Oakland	
Expanded parking at Richmond Parkway and Hercules Transit Centers	
Long-term	**$141 m**
Freeway ramp improvements at I-80/Macdonald, Richmond Parkway, and Hercules Transit Centers	
New Express Bus-BRT transit center at I-80/Macdonald Avenue	
Total	**$242 m**

Source: WSP | Parsons Brinckerhoff with M Lee Corporation and Kimley-Horn, 2017

2.2 I-80 SMART Corridor Project

The I-80 Integrated Corridor Mobility (ICM) Project implemented an Active Traffic Management (ATM) system along a 20.5 mile stretch of I-80 between the Carquinez Bridge and the Bay Bridge. The main elements of the system included upgrades and integration of Intelligent Transportation System (ITS) elements on I-80, parallel arterial routes, and connecting local roadways to improve travel time reliability and reduce accidents and associated congestion. Those elements included: incident management via overhead signs; traffic information boards showing regional congestion and travel times; ramp metering to smooth traffic merging; and local street signs to guide freeway detours around incidents.

Transit priority elements were also incorporated that benefit express bus service using I-80, including preferential access treatments and transit priority. At highway entrances, preferential treatment would allow buses to bypass ramp meter signals as other HOV vehicles. The project implemented transit signal priority (TSP) systems along arterials connecting I-80 to San Pablo Avenue that could be potentially be utilized by a new express bus service. Some of the improvements have not been installed, or are not activated yet therefore specific locations would have to be identified if needed for any new Express Bus service recommendations.

2.3 CCTA Express Bus Study (2016)

The Contra Costa Transportation Authority (CCTA) initiated a study in 2016 that built off the 2001 Contra Costa Express Bus Study, which analyzed several corridors to document the need and establish a vision for express bus service. The 2016 study was a collaborative effort between all the county's express bus operators, including AC Transit, WestCAT, Contra Costa County Transit Authority (County Connection), and Tri-Delta Transit. The study focused on three main corridors: I-80, I-680, and Highway 4.

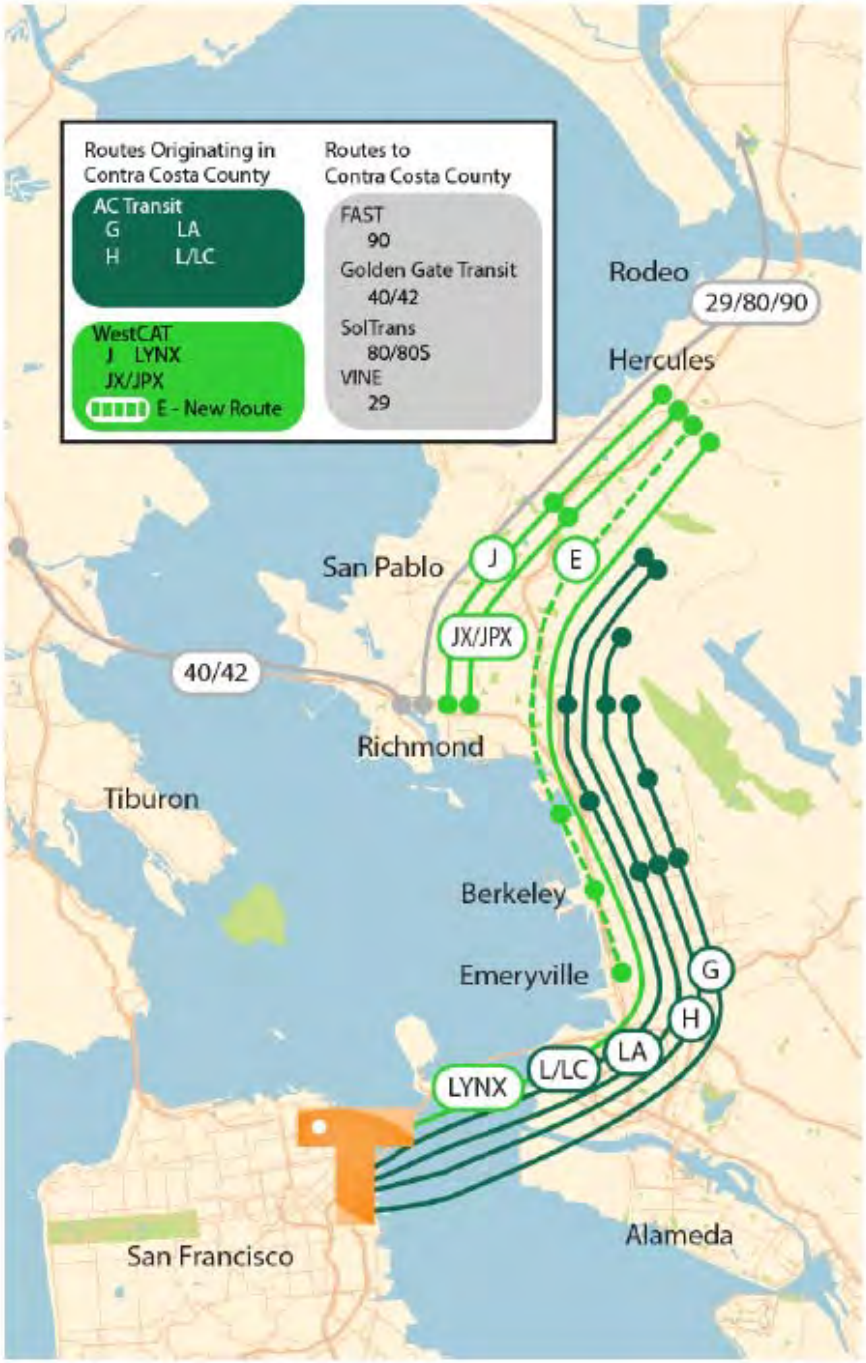
The service plan for I-80 was combined with Highway 4 and proposed a series of express bus routes that would provide service from Martinez to West County and the Hercules Transit Center. The plan envisioned routes that enter the freeway at various points with destinations to El Cerrito Del Norte BART, Berkeley, Emeryville, and San Francisco. Proposed routes B1/B2, C1/C2, D, and E are documented in Figure 6. These routes would provide service

from Hercules and Richmond Parkway to Berkeley/Emeryville and San Francisco. A map of proposed Route E, with service from Hercules and Richmond Parkway to Berkeley and Emeryville, is shown in Figure 7.

Figure 6: I-80/Highway 4 Proposed Service Pattern (CCTA Express Bus Study, 2016)

Service Pattern	Vallejo	Concord	Martinez	Hercules	Richmond Pkwy	Del Norte	Berkeley/ Emeryville	San Francisco	Headway Peak	Headway Base
A	X				X	X			10	15
B1[35]		X	X	X	X			X	10	-
B2			X	X	X			X		15
C1[36]				X	X	X			6	12
C2				X	X	X			9	12
D					X			X	10	15
E				X	X		X		15	15
Peak Headway	10	10	10	2	1.5	2.5	15	5		
Base Headway	15	-	15	4	2.5	5	15	7.5		

Figure 7: Proposed Route E (CCTA Express Bus Study, 2016)



2.4 Grand MacArthur Transit Operations Analysis (Ongoing)

A number of AC Transit Transbay routes currently travel to San Francisco along westbound I-580 using the Bay Bridge, which is very congested during most of the AM peak period. The Grand MacArthur Transit Operations Analysis is exploring diverting Transbay buses to use West Grand Avenue to reduce travel time delay and improve travel time reliability during commute periods. The study found that the optimal transit route varies by time of day and freeway conditions. Therefore, this analysis is considering a dynamic transit routing application that would provide a decision-making process for Transbay buses to select the optimal route.

The project identified an interim solution as well as long-term solution that would implement tools to demonstrate benefits to Transbay buses. The interim solution includes a web interface for AC Transit for real-time traffic information as well as camera feeds at key points along West Grand Avenue. The long-term solution could include automated decision tools that determine optimal routing with real-time traffic integration with AC Transit's CAD/AVL. Both solutions, if implemented along other corridors, could benefit current and future express bus routes from West County.

2.5 AC Transit Transbay Tomorrow

To address some long-standing issues with overcrowding, and to update their service network, AC Transit developed the Transbay Tomorrow service plan. The plan reallocates existing resources based on number of vehicles and total hours of service in a cost neutral approach with some additional funds provided by the Metropolitan Transportation Commission's (MTC) Bay Bridge Forward (BBF) Program. The plan uses various strategies to improve overcrowding, reliability, speed, and productivity of the service. In addition to adding vehicles and increasing frequency and span of service, stops are consolidated and routes are realigned to use major roads to increase speed and reliability.

The plan outlines that these strategies, although currently constrained by funding, can be implemented further as part of a larger set of unconstrained proposals for Transbay service expansion, should there be additional sources of funding identified.

2.6 San Pablo Avenue Complete Streets Project (Ongoing)

Alameda County Transportation Commission (ACTC) is conducting a complete streets study of San Pablo Avenue from downtown Oakland to Hilltop Mall. The project will propose multimodal improvements along (and potentially parallel to) San Pablo Avenue. These improvements will include bus facilities that could potentially be utilized by an express bus service proposed through this Plan. Bus improvements under consideration include exclusive lanes, transit signal priority, and queue jumps.

2.7 WCCTA Short-Range Transit Plan (2016)

To obtain funding for transit services over the next ten years, the Western Contra Costa Transit Authority (WCCTA) adopted a Short-Range Transit Plan (SRTP) that serves as a blueprint to meet current and future transit needs and demands for the community. WCCTA provides the WestCAT transit service; its service area includes the area of West Contra Costa County spanning from the Hilltop area to Crockett. Forecasted population growth, planned development changes, and a fiscally constrained budget are analyzed and balanced to develop the SRTP. The plan outlines current service levels and identified needs to be addressed including a financially unrestrained vision for the future that includes improving: service to Oakland/Emeryville; Lynx service to and from Pinole; service expansions throughout the area; increased weekend service; and service to Solano County.

Oakland, Emeryville, and Berkeley are identified as having a strong commuter demand from the service area. The SRTP states that the majority of the morning trips in the service area are destined for the East Bay (primarily Oakland and UC Berkeley) and transfer to BART at the El Cerrito del Norte BART station. Preliminary results showed that an express route to the East Bay had potential demand. West Berkeley, downtown Oakland, and Emeryville's commercial district were identified as having potential demand for an express route.

The SRTP also proposed the addition of express bus service between Pinole and San Francisco. The plan does not identify a specific park-and-ride location, but it notes that routing on an express bus service could be adjusted to serve local stops to alleviate the lack of a park-and-ride facility.

Both the proposed service to Pinole and potential express service to Oakland/Emeryville are considered part of WCCTA's long-term "vision," which was developed without considering financial constraints; thus, these proposed services are considered long-term goals and not yet being considered for implementation.

2.8 Emeryville-Berkeley-Oakland Transit Study (EBOTS)

The Emeryville-Berkeley-Oakland Transit Study (EBOTS) focused on cultivating an environment within the study corridor that would enhance the environment for transit, pedestrians, and bicyclists. The goals of the study included: creating an environment where a car is not required for mobility; creating a well-connected and cohesive transit corridor; coordinating transit improvements with future population growth; implementing short-term transit improvements; and enhancing long-term mobility within the corridor.

Short-term, mid-term (5-10 years), and long-term (10-20 years) improvements were identified that would benefit routes serving the EBOTS area, including express buses from West County. Short-term improvements included: expanding the West Berkeley shuttle; initiating a shuttle in West Oakland; and implementing bus stop upgrades and amenity improvements. Mid-term improvements included an enhanced bus trunkline that would provide bi-directional service from Jack London Square to West Oakland BART and north through Emeryville and west Berkeley. Long-term improvements included adding streetcar routes that would serve West Oakland BART and Jack London Square. These improvements showed a projected increase of 4,000-7,000 transit trips and a reduction in total vehicle miles traveled (VMT) per line. The improvements would support an express bus service to the EBOTS area, providing connectivity that would effectively and conveniently expand access for all transit users.

3 EXISTING TRANSIT SERVICES

3.1 Existing Transit Services

A number of existing express transit services are already provided in the study area by both AC Transit and WestCAT. These services are documented below.

WestCAT

WestCAT provides the following express bus routes in West County, which are also depicted in Figure 8:

- Routes **JL/JR** provide express bus service from Hercules, Pinole, and Tara Hills to El Cerrito del Norte BART. Both routes have a northern terminus at Hercules Transit Center and provide service along San Pablo Avenue in Hercules, Pinole, and Tara Hills. These routes diverge in northern Richmond, where route JL serves Hilltop Mall, while route JR serves Richmond Parkway Transit Center; both routes then travel straight to El Cerrito del Norte BART via I-80. Service is provided all day in both directions.
- Routes **JX/JPX** provide express bus service from Hercules to El Cerrito del Norte BART. Both routes have a northern terminus at Hercules Transit Center. Route JX provides direct, point-to-point service between

Hercules Transit Center and El Cerrito del Norte BART via I-80. Route JPX provides service along San Pablo Avenue and Tennent Avenue in Pinole, then follows I-80 to El Cerrito del Norte. Non-peak JPX trips also make additional stops along Fitzgerald Drive in Pinole and at Richmond Parkway Transit Center. Service is provided all day in both directions.

- The **Lynx** is an express bus route service from various locations in Hercules to the Salesforce Transit Center in San Francisco. All trips serve the Hercules Transit Center; other locations in Hercules served at various points throughout the day include the Rodeo Park & Ride, Victoria Crescent, and BioRad.

AC Transit

AC Transit has a network of bus lines that make local stops in various areas within its East Bay service area, then run an express segment on the regional freeway network to another transbay destination. These are branded as "Transbay" lines. All Transbay lines in the study area provide service to the Salesforce Transit Center in San Francisco. For all Transbay lines in the study area, only riders going to (or from) the Salesforce Transit Center may board (or alight) along the local segments; riders may not utilize the service to make local trips. The following Transbay lines provide service in West Contra Costa County; these are also depicted in Figure 9:

- **Line G** provides service from Potrero Avenue & Richmond Street in El Cerrito to the Salesforce Transit Center; in the study area, it makes local stops in El Cerrito along Richmond Street and at El Cerrito Plaza BART. Line G makes additional local stops in Berkeley and Albany before heading to San Francisco via I-80.
- **Line H** provides service from Barrett Avenue & San Pablo Avenue in Richmond to the Salesforce Transit Center. In the study area, it makes local stops along Barrett Avenue and Arlington Boulevard in Richmond and El Cerrito. Line H makes additional local stops in Berkeley before heading to San Francisco via I-80.
- **Line L** provides service from Princeton Plaza Shopping Center in San Pablo to the Salesforce Transit Center. In the study area, it makes local stops in San Pablo along El Portal Drive, Church Lane, and San Pablo Avenue, and along San Pablo Avenue in Richmond and El Cerrito. It makes additional local stops in Albany before heading to San Francisco via I-80.
- **Line LC** provides service from Hilltop Park & Ride to the Salesforce Transit Center. It also makes local stops in Richmond at Hilltop Mall, Park Central & Hilltop Drive, and Richmond Parkway Transit Center before getting on I-80; the route gets off I-80 at El Portal Drive and makes local stops along Glenlock Street and Rollingwood Drive. South of Rollingwood Drive, Line LC has the same alignment as Line L.
- **Line LA** provides service primarily from the Hilltop Park & Ride and the Richmond Parkway Transit Center to the Salesforce Transit Center. In the study area, it makes local stops at Hilltop Mall, Park Central & Hilltop Drive, and Richmond Parkway Transit Center before heading to San Francisco via I-80.

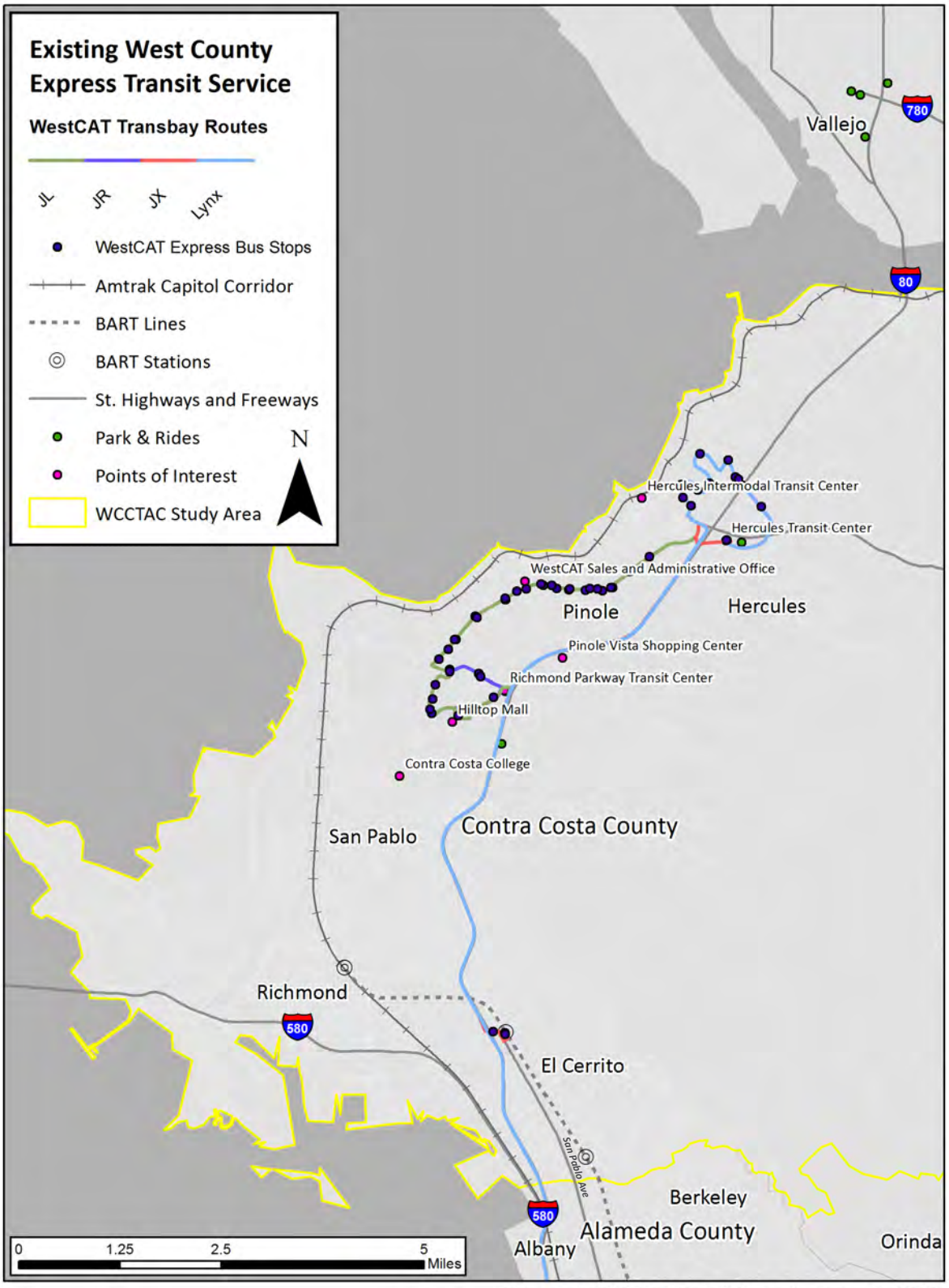
Other Transit Services

Transit providers in other counties provide express bus service with destinations located within the study area. These include the following:

- Golden Gate Transit's Route 40/40X provides express bus service from San Rafael Transit Center to El Cerrito del Norte BART; it makes some local stops along Cutting Boulevard in Richmond. Trips on Route 40 also serve one stop in Point Richmond.
- Vine Transit Route 29 provides express bus service to Vallejo Ferry Terminal and El Cerrito del Norte BART. Route 29 serves stops in Calistoga, St. Helena, Yountville, Napa, and American Canyon.
- Fairfield and Suisun Transit's (FAST) Green Express route provide express bus service from Fairfield and Suisun City to El Cerrito del Norte BART.

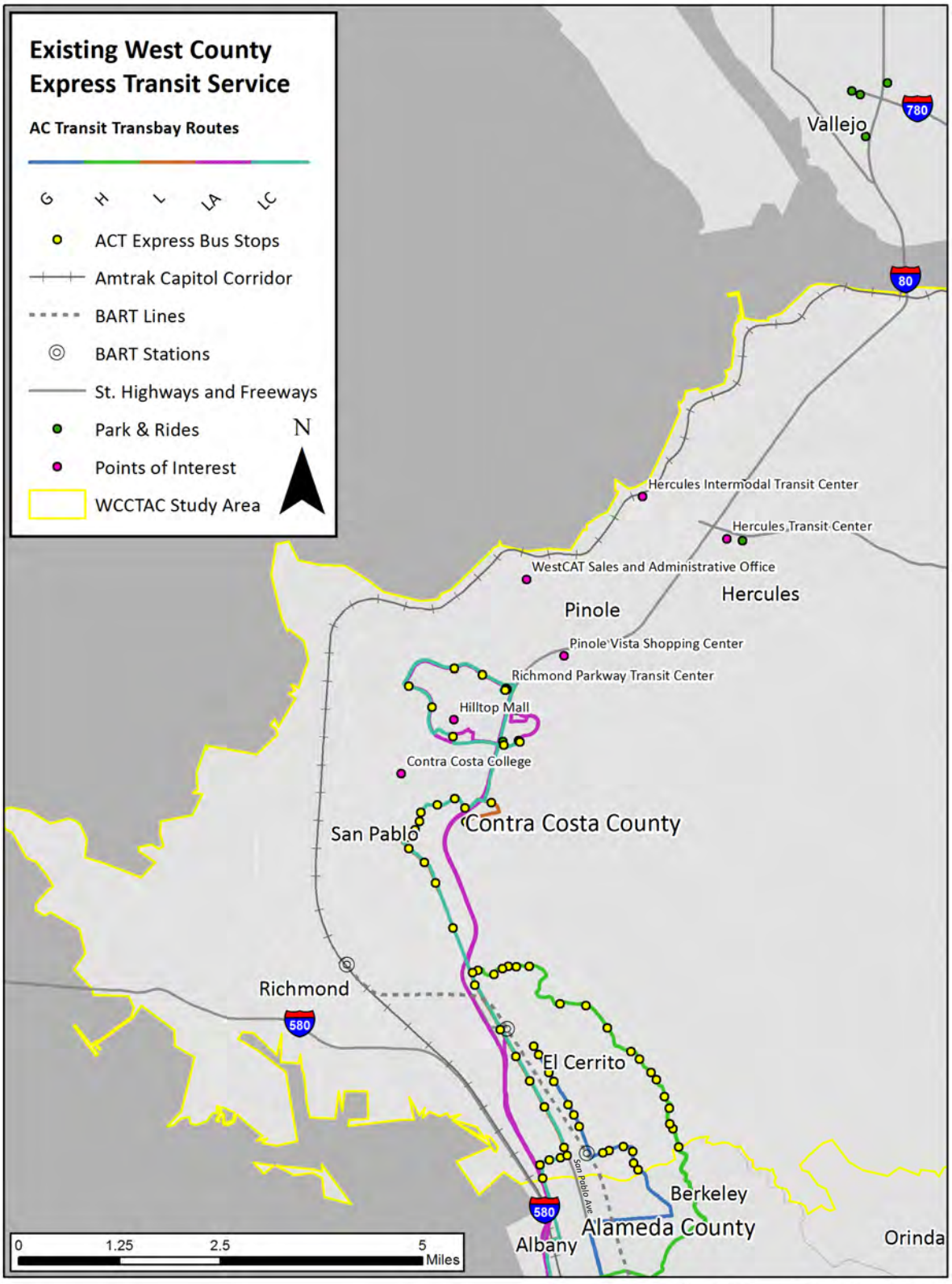
- Soltrans provides express bus service from locations in Vallejo to El Cerrito del Norte BART via Routes 80 and 82.

In addition to express bus service, BART provides heavy rail service to the Richmond Transit Center in downtown Richmond providing access to downtown Berkeley, downtown Oakland, and San Francisco. The Capitol Corridor passenger rail line, operated by Amtrak, provides service from Sacramento to San Jose and makes stops at the Richmond Transit Center, Berkeley, Emeryville, and Jack London Square.



Sources: ACS 2016, AC Transit Contra Costa County, BART

Figure 8: Existing WestCAT Express Bus Service



Sources: WestCAT, Contra Costa County, BART

Figure 9: Existing AC Transit Express Bus Service

3.2 Existing Transit Ridership

Ridership data is useful to evaluate the performance of existing routes and to project the ridership potential of new service in other areas. Data was supplied to Kimley-Horn by a number of transit agencies. WestCAT provided ridership by route for express routes. AC Transit provided ridership by route, trip, and stop, as well as on-board survey data. BART provided station-level ridership and on-board survey data.

Table 1 shows the ridership by route for existing AC Transit and WestCAT express bus routes. Figure 10 shows ridership by stop for AC Transit Transbay routes; ridership data by stop was not available for WestCAT. In the study area, ridership on Transbay routes is highest at major transit centers and on stops along San Pablo Avenue. The highest ridership stops in the study area (accounting only for ridership generated by AC Transit Transbay routes) are listed below in Table 2.

Table 1: Ridership by Route (AC Transit, WestCAT)

Provider	Route	Inbound Vehicle Trips	Outbound Vehicle Trips	Average Daily Riders
AC Transit Transbay Routes				
	G	7	5	471
	H	8	9	628
	L	10	11	678
	LA	12	14	449
	LC	0	3	55
	Total	37	42	2,281
WestCAT Express and Transbay Routes				
	JR/JL Express	54	56	1,211
	JX Express	29	28	394
	JPX Express	42	43	564
	LYNX Transbay	42	44	1,110
	Total	167	171	3,279

Table 2: Top 5 Ridership Stops in Study Area (AC Transit Transbay Ridership Only)

Location	Workers
Richmond Parkway Transit Center	68
San Pablo Ave & Moeser Ln (Richmond)	31
Hilltop Dr & Vista Del Mar (Richmond)	23
Park Central St & Hilltop Dr (El Sobrante)	22
Arlington Ave & Coventry Rd (Kensington)	21

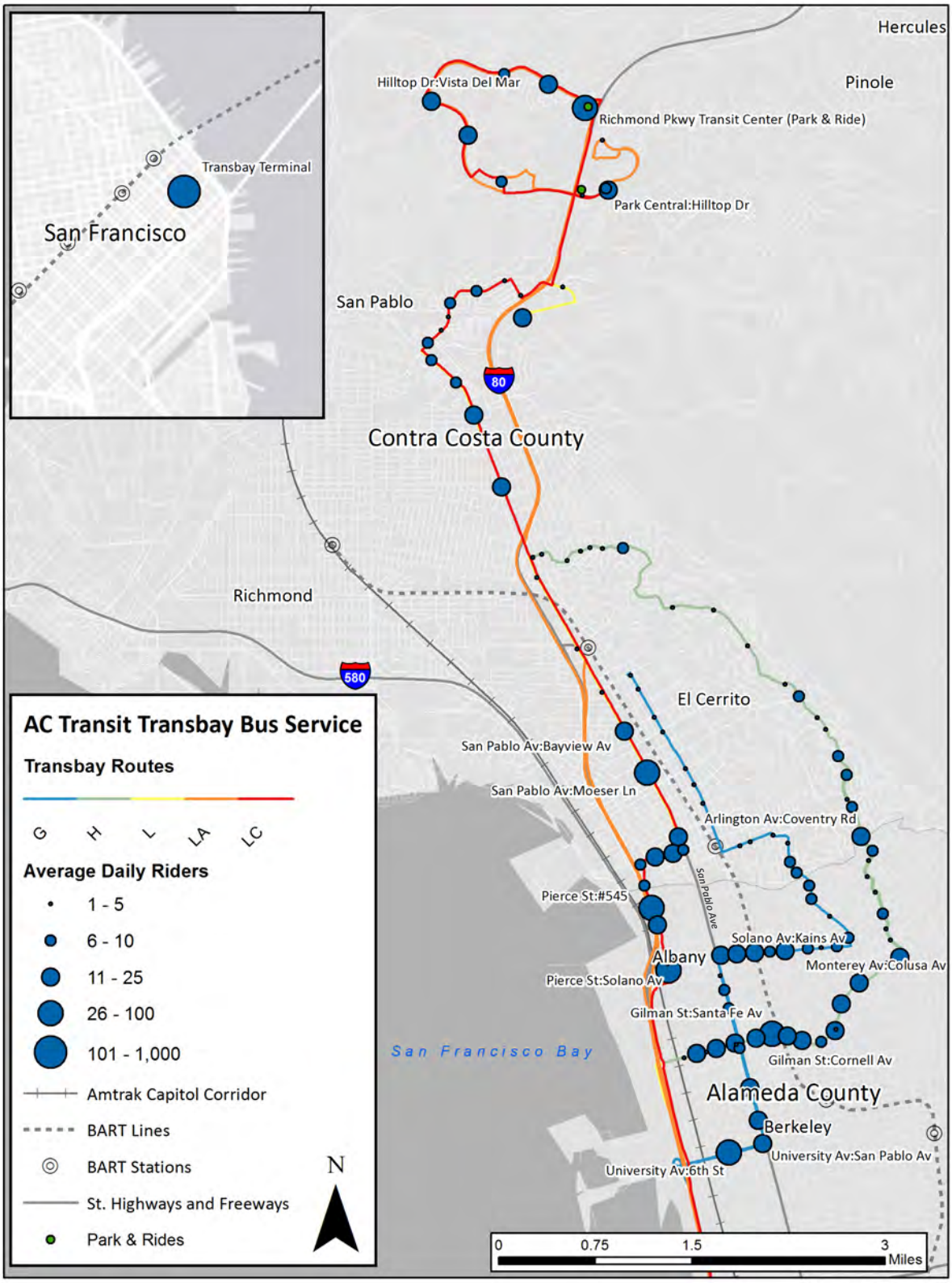
Mode of access data was gleaned from on-board survey data from AC Transit Transbay lines. Figure 11 shows bus access mode for Transbay riders boarding in the study area and heading to San Francisco; Figure 12 shows the bus access mode for Transbay riders boarding in San Francisco and heading to the study area. Mode of access data was not available for Line LC. For all AC Transit Transbay routes providing service in the study area, the vast majority of riders walk to reach their bus.

Figure 13 shows the number of AC Transit Transbay riders who have access to an automobile; overall, only 49% of riders surveyed had access to a car.

Mode of access and demographic data was also collected in the 2017 WestCAT on-board survey. Figure 14 shows the mode of access for WestCAT riders traveling from home to their first boarding point. Similar to the AC Transit Transbay lines, the vast majority (80%) of riders of WestCAT express routes (Routes JR/JL/JX/JPX) accessed the bus by walking. For WestCAT transbay service (Lynx), 30% of riders walked to their first boarding point while 26% were dropped off and 42% either drove alone and parked or carpooled and parked. Almost all riders accessed their non-home destination by walking – 93% and 96% of express and transbay riders, respectively.

Figure 15 shows the number of drivable vehicles available to WestCAT express and transbay riders. Only 17% of express riders and 8% of transbay riders did not have access to a car.

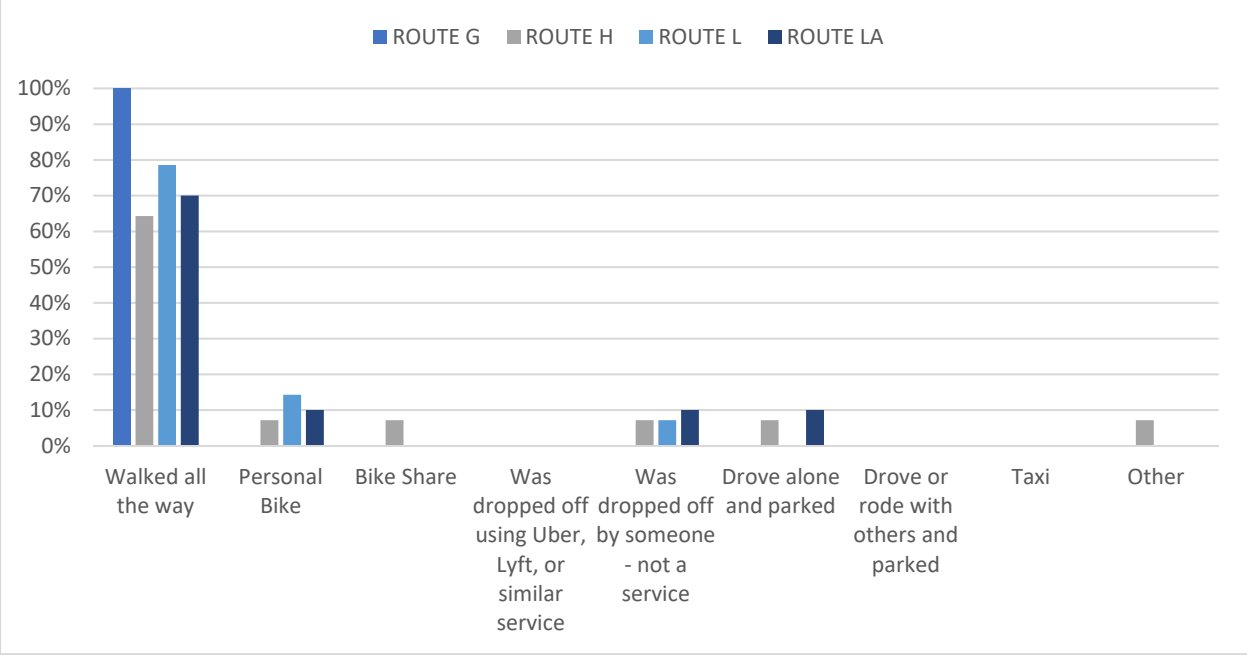
Figure 16 shows mode of access for the BART stations in the study area. Approximately one third of riders at these stations access them by driving alone or carpooling.



Sources: AC Transit

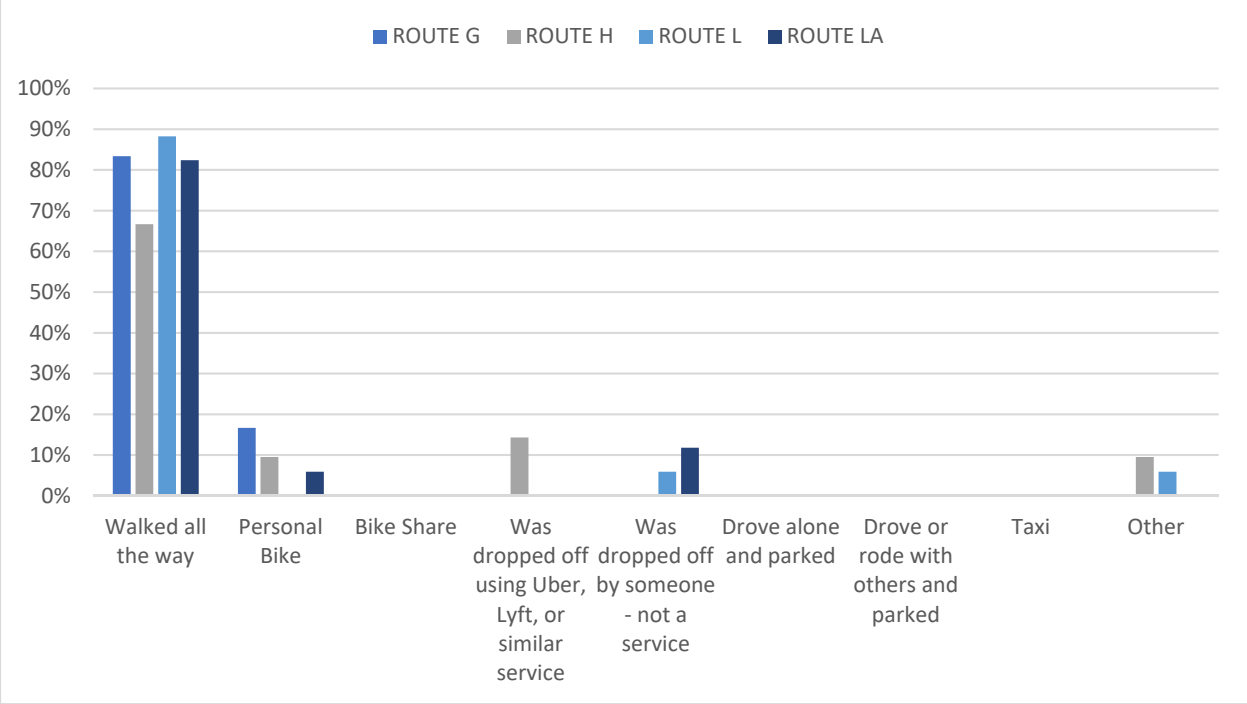
Figure 10: Ridership by Stop (AC Transit)

Figure 11: AC Transit Transbay Access Mode – Toward San Francisco



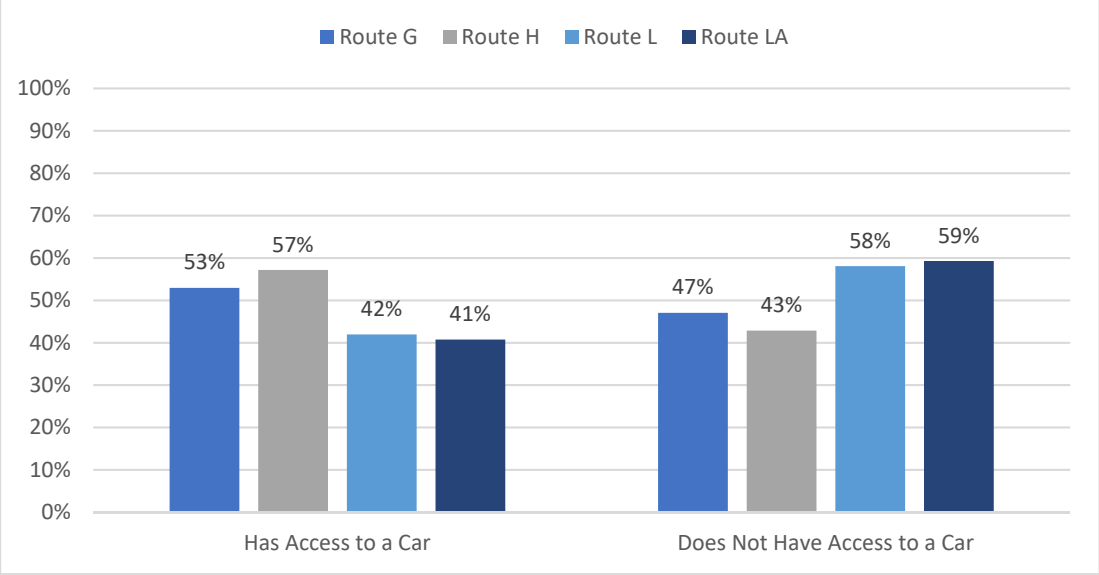
Source: AC Transit Onboard Survey Data (Obtained 2012, cleaned 2018)

Figure 12: AC Transit Transbay Access Mode – Toward Study Area



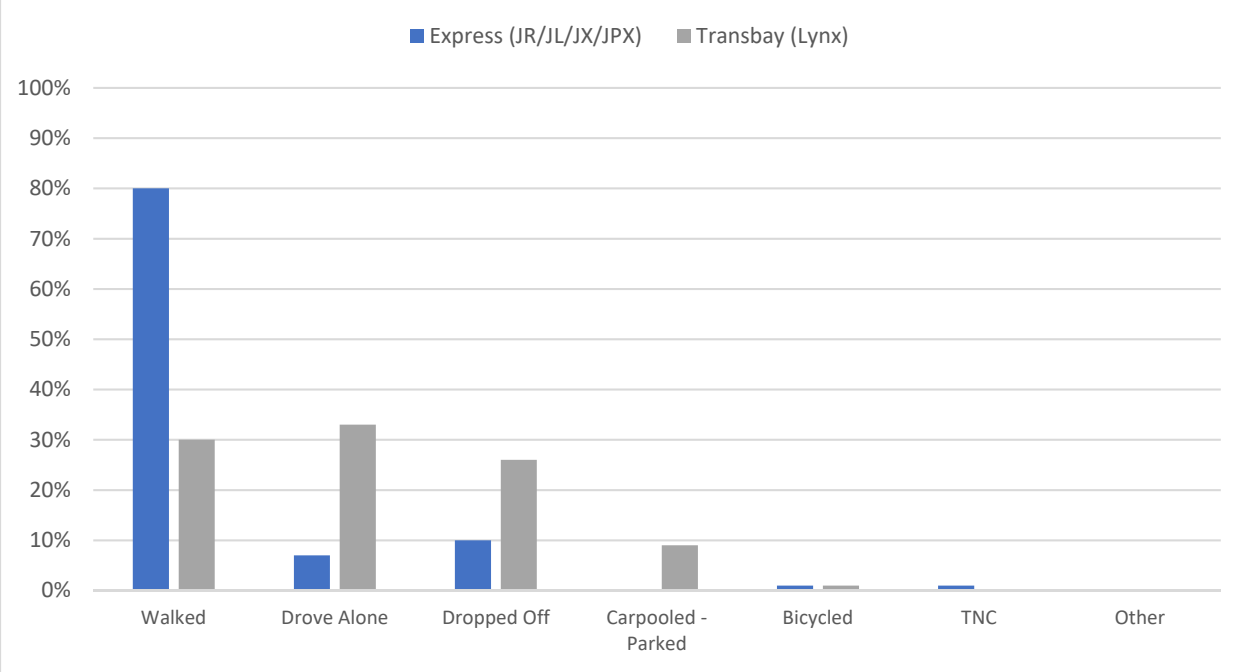
Source: AC Transit Onboard Survey Data (Obtained 2012, cleaned 2018)

Figure 13: Automobile Access – AC Transit Transbay Riders



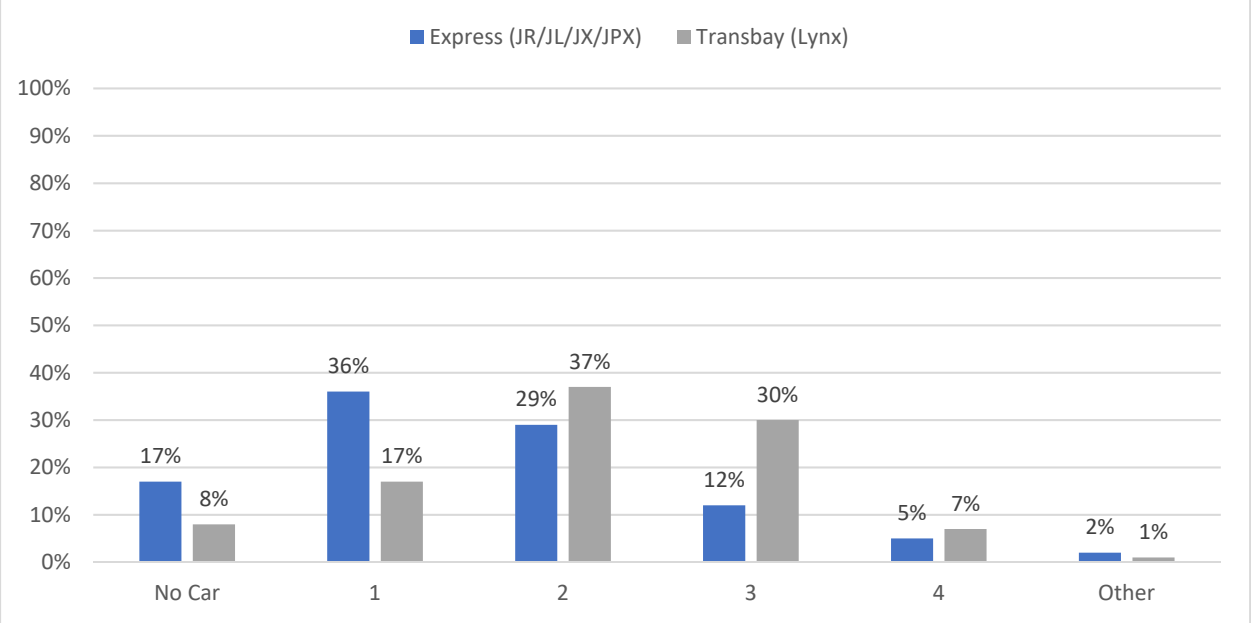
Source: AC Transit Onboard Survey Data (Obtained 2012, cleaned 2018)

Figure 14: Mode of Access – WestCAT Express/Transbay Riders



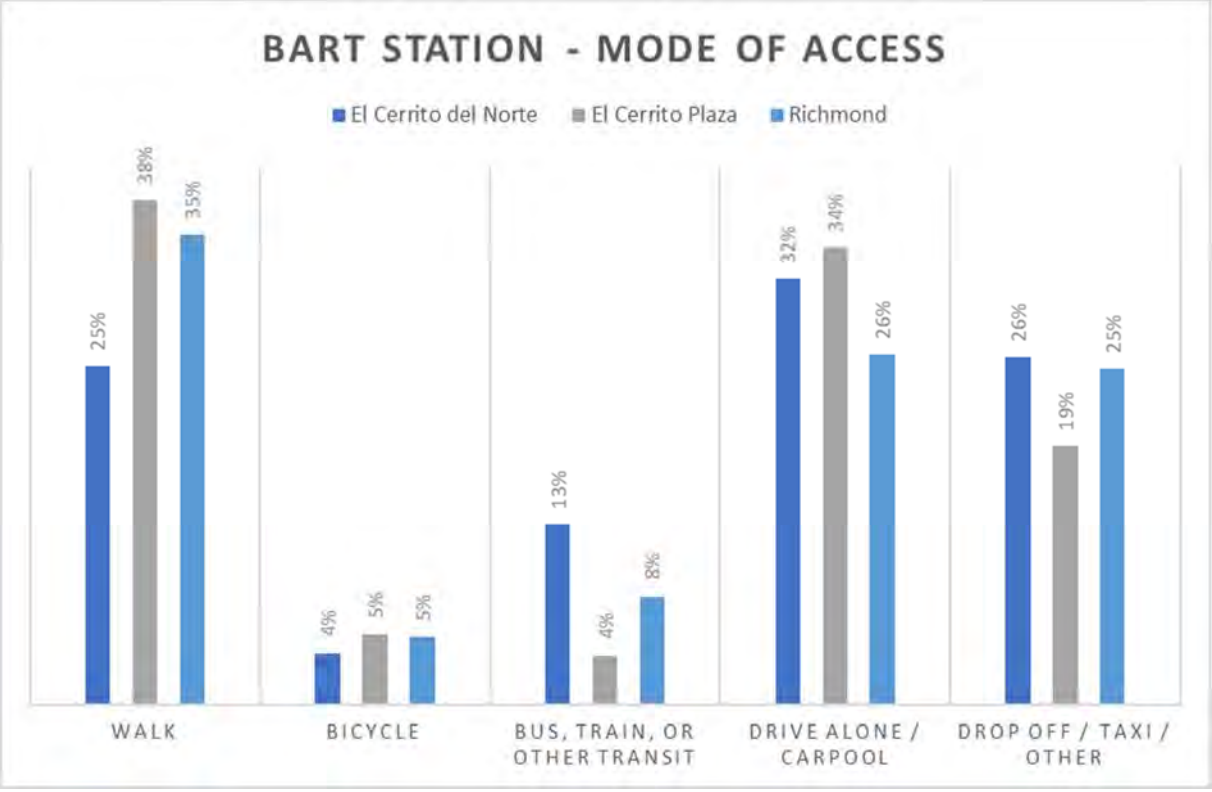
Source: WestCAT Transit Passenger Survey Data (2017)

Figure 15: Drivable Vehicles Available to Household – WestCAT Express/Transbay Riders



Source: WestCAT Transit Passenger Survey Data (2017)

Figure 16: Mode of Access – El Cerrito Plaza/El Cerrito del Norte/Richmond BART



Source: 2015 BART Station Profile Survey

4 POPULATION AND EMPLOYMENT

4.1 Population Density

Figure 17 shows the population density in West County. As can been seen in the figure, population density in the study area is concentrated in the cities of Hercules, Pinole, San Pablo, Richmond, and El Cerrito, as well as the unincorporated areas in between. Population density is significantly lower in the areas north of Rodeo, west of Richmond Parkway, and the San Pablo Ridge.

4.2 Employment Density

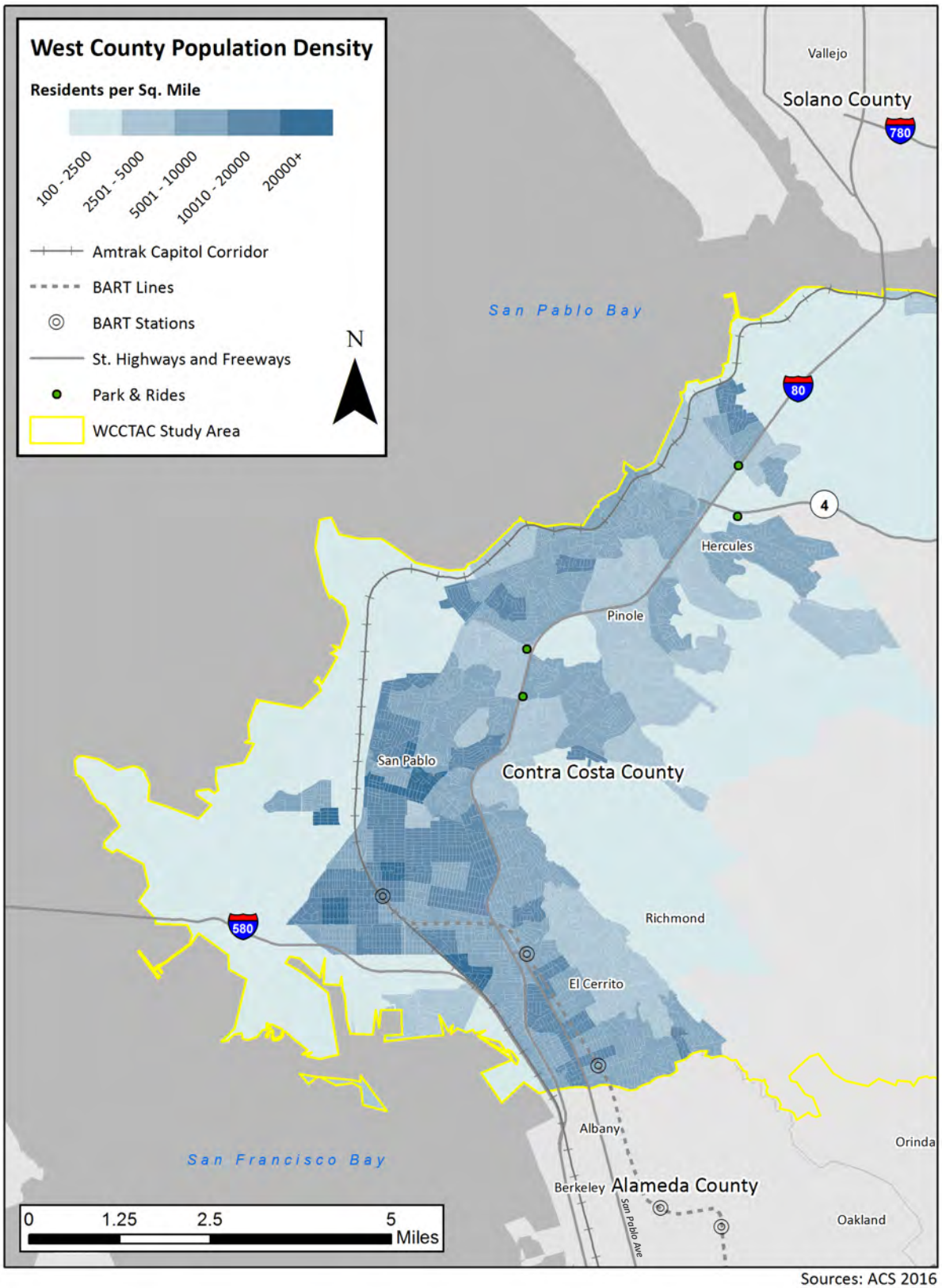
Figure 18 shows overall employment density throughout the region including West Contra Costa County, San Francisco, and Alameda County. Major employment centers include San Francisco, Oakland, and Emeryville.

4.3 Demographics

Approximately 26.6% of the population of West County is low income; this figure is based on the definition of low income as established by the Department of Housing and Urban Development, which defines low income as people making at or below 50% of the county median income. Figure 19 shows the concentration of low income households in the study area.

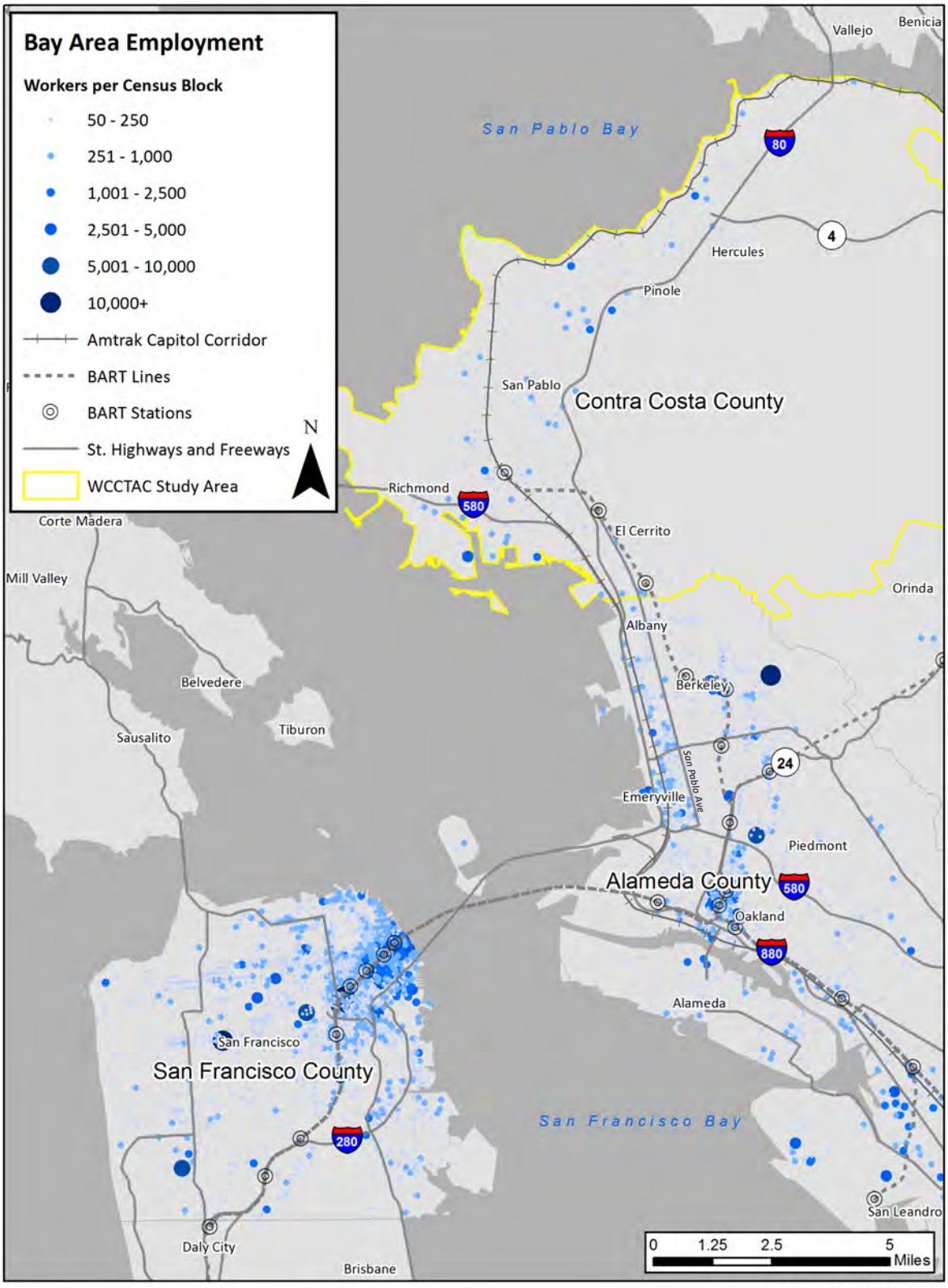
West Contra Costa County has a minority population of 75.3% (ACS); minority population in this case is defined as residents identified as non-White or Hispanic. Figure 20 shows the distribution of minority populations in the study area.

The ACS indicated that 7.8 percent of households in the study area do not have a vehicle. A significant portion of these households are concentrated in the cities of Richmond, San Pablo, and El Cerrito. Figure 21 shows the concentration of zero-automobile households in the study area.



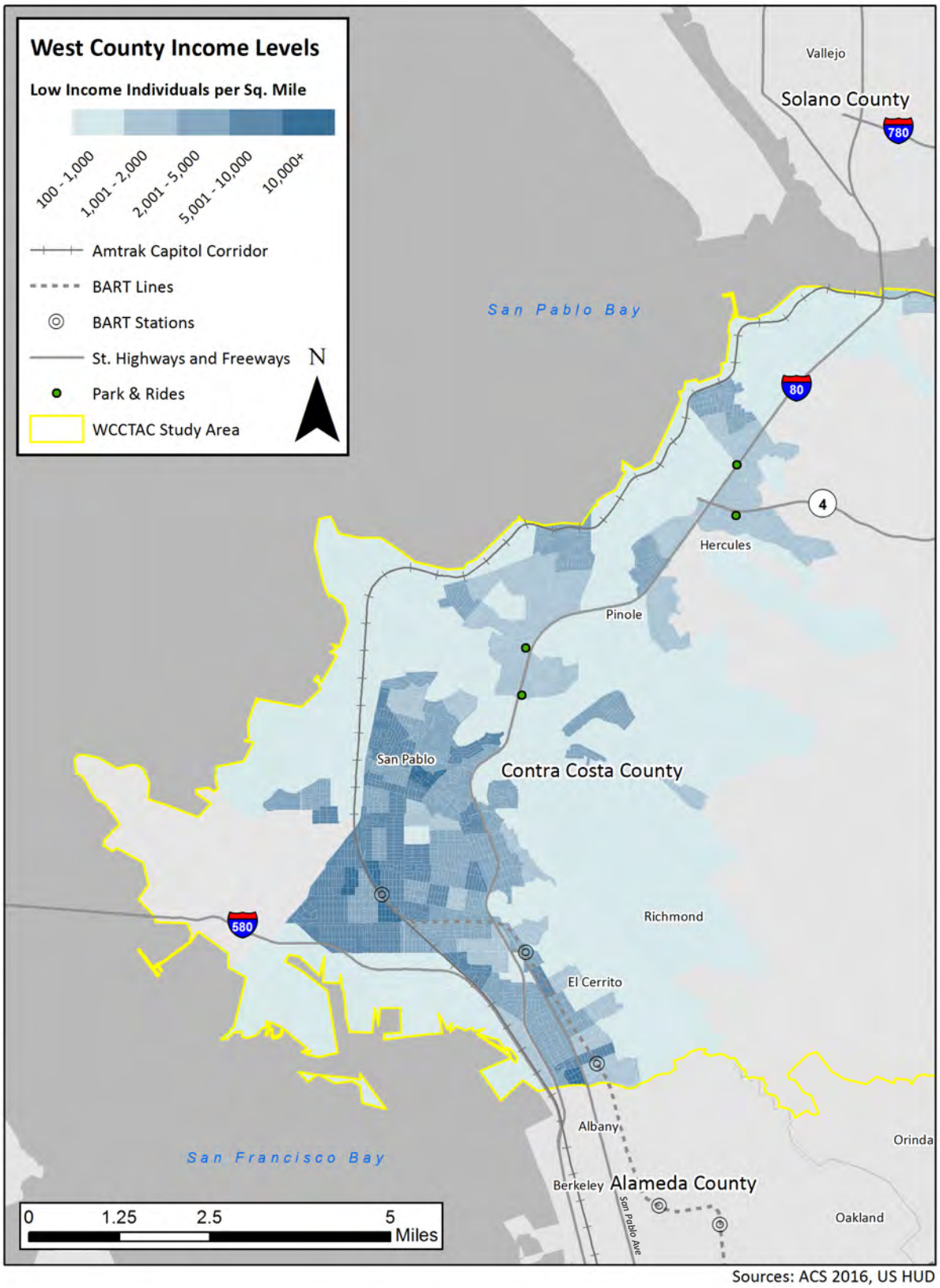
Sources: ACS 2016

Figure 17: Study Area Population Density (US Census Data)



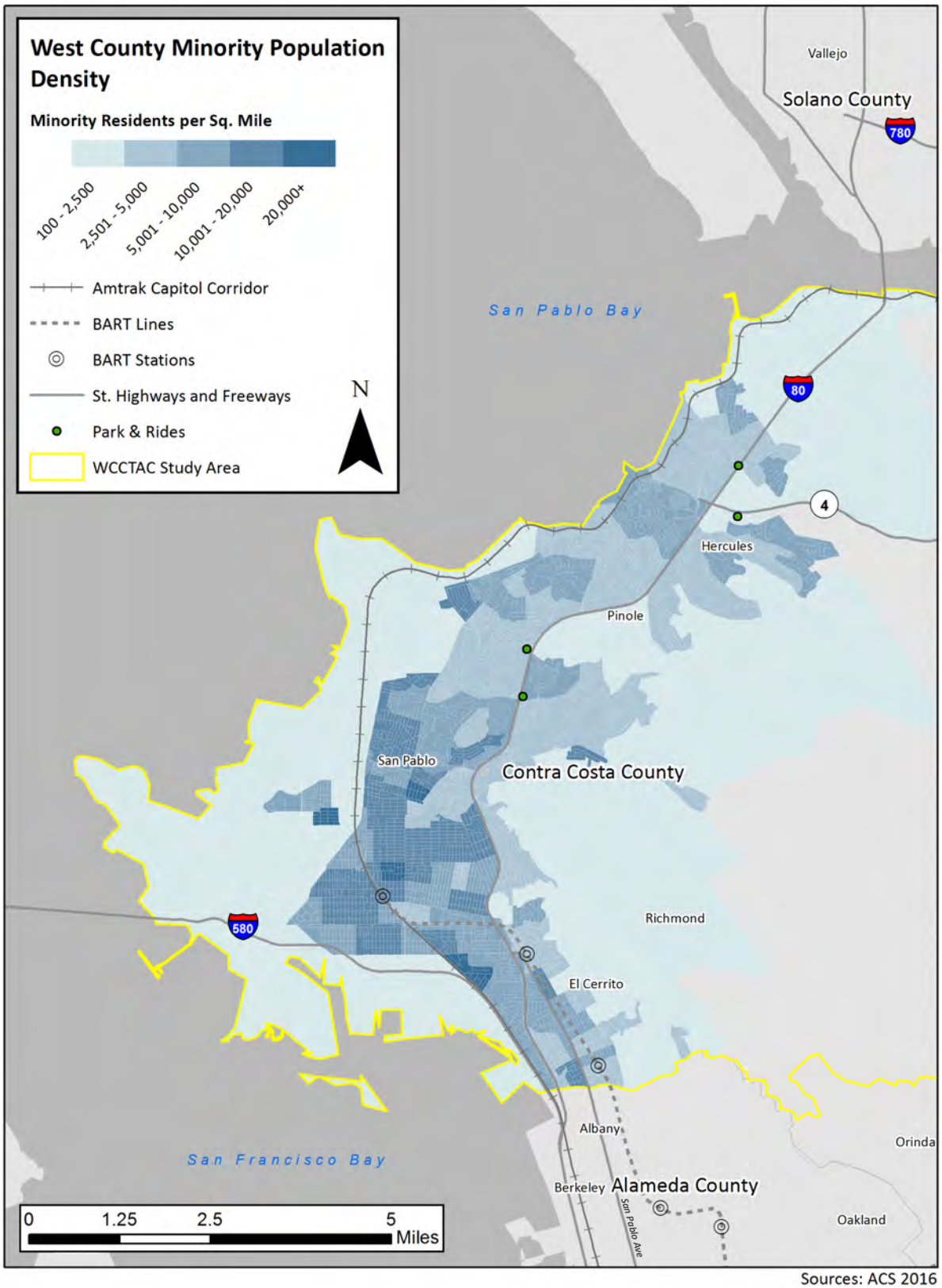
Sources: LEHD 2015

Figure 18: Study Area Employment Density



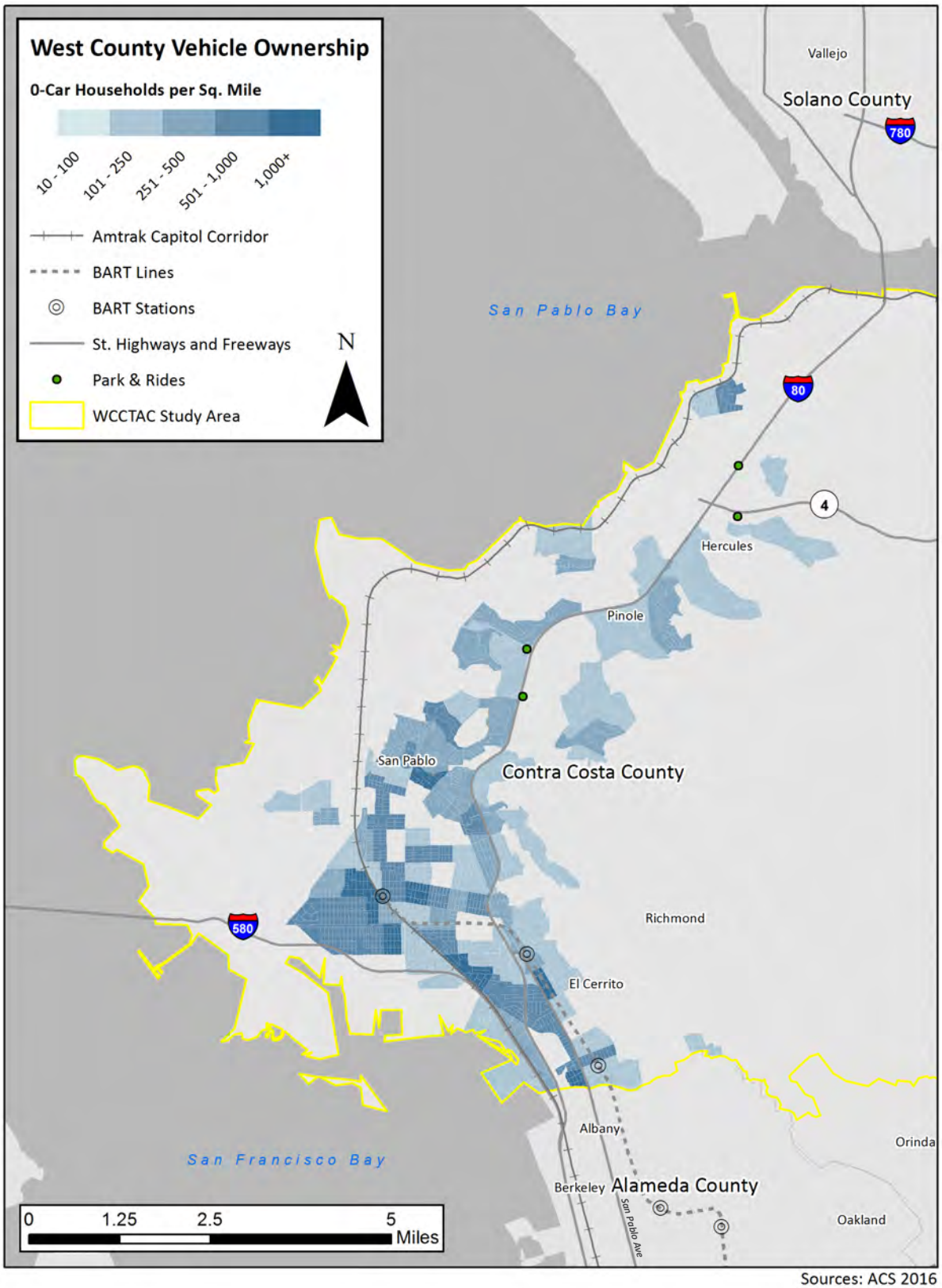
Sources: ACS 2016, US HUD

Figure 19: Study Area Low-Income Population Density (US Census Data)



Sources: ACS 2016

Figure 20: Study Area Minority Population Density



Sources: ACS 2016

Figure 21: Study Area Density of Zero-Auto Households (US Census Data)

5 CURRENT COMMUTE PATTERNS

5.1 Existing Commute Patterns

Over 115,000 workers reside in the study area; a high proportion of these commuters–over 95,000, or 83%–of these workers are employed in locations outside of the study area. A breakdown of the top ten employment locations (cities or census-designated places) for all workers is shown in Table 3. Table 4 breaks down the top ten employment locations outside of the study area.

Table 3: Top 10 Overall Employment Locations for Study Area Residents (LEHD Data)

Location	Workers
San Francisco	21,471
Oakland	11,344
Berkeley	9,971
Richmond	9,901
San Rafael	3,044
San Pablo	2,678
Martinez	2,102
Walnut Creek	2,052
San Jose	1,937
Pinole	1,886
Other	*49,514*
Total	**115,900**

Table 4: Top 10 Non-Study Area Employment Locations for Study Area Residents (LEHD Data)

Location	Workers
San Francisco	21,471
Oakland	11,344
Berkeley	9,971
San Rafael	3,044
Martinez	2,102
Walnut Creek	2,052
San Jose	1,937
Concord	1,875
Emeryville	1,735
Vallejo	1,517
Other	*38,622*
Total	**95,670**

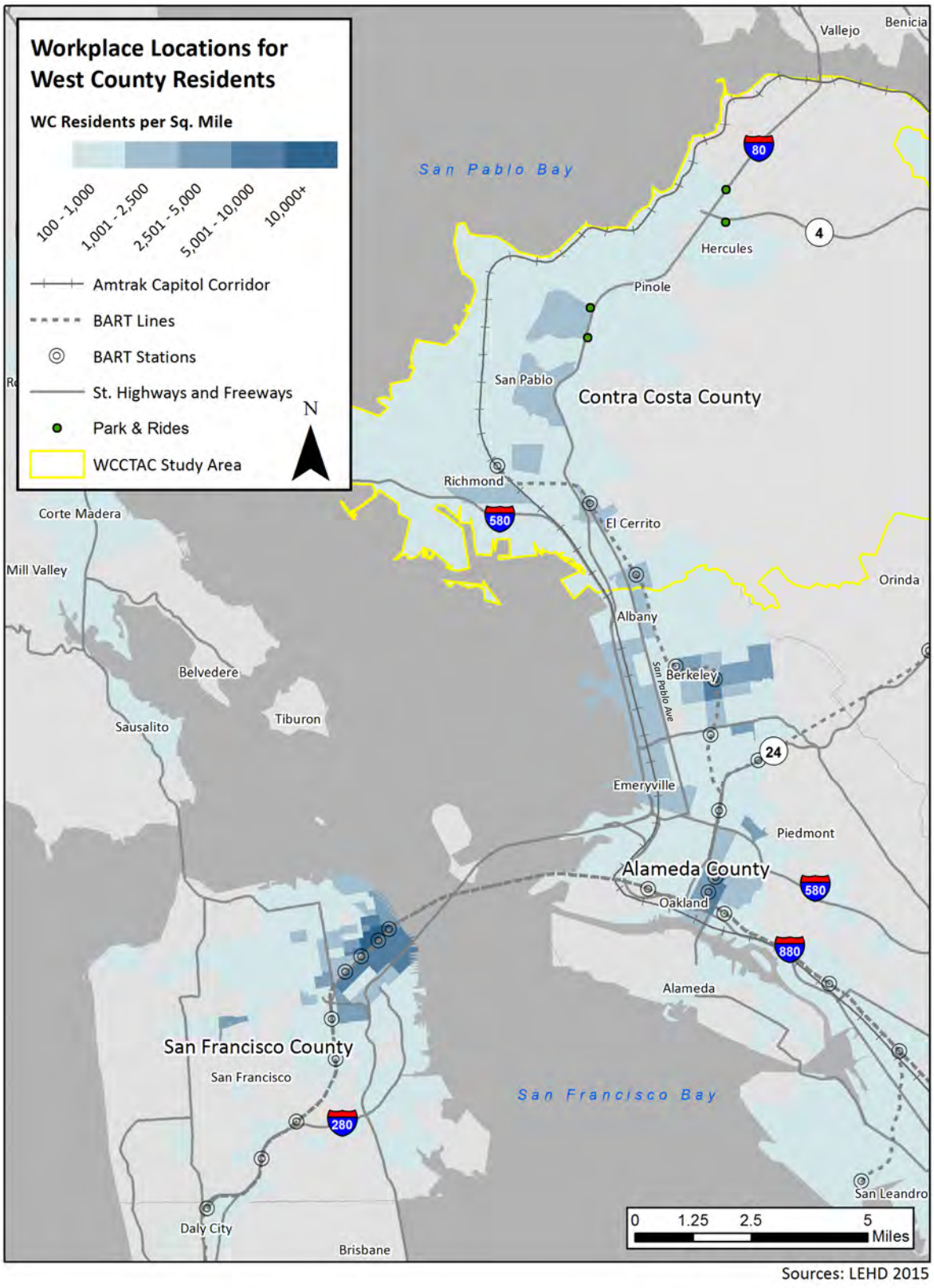
Figure 22 shows the employment density of West Contra Costa County residents; i.e. the number of study area residents per square mile working in a particular census tract. Notable areas outside of the study area with a high concentration of West Contra Costa County workers include:

- San Francisco
    - Market Street Corridor

    - Financial District
    - South of Market Neighborhood ("SoMa")
    - UCSF Parnassus Campus
    - Northern portions of the Mission District
- Oakland
    - Jack London Square
    - Downtown Oakland
    - Uptown Oakland
    - Broadway/MacArthur Boulevard Area
- Berkeley
    - Downtown Berkeley
    - UC Berkeley Campus
    - North Berkeley
- Berkeley/Emeryville
    - Commercial area approximately bound by University Avenue, San Pablo Avenue, I-80, and I-580

Figure 23 shows the residential locations of workers employed in Oakland, Berkeley, or Emeryville. Figure 24 shows the residential locations of workers employed in San Francisco. For both locations, workers in the study area are concentrated in Richmond, San Pablo, and Hercules.

The following pages show the distribution of study area residents who commute by driving alone (Figure *25*), carpool (Figure 26), transit (Figure 27), and either walking or biking (Figure 28). The data show that areas around San Pablo, Richmond, and El Cerrito have higher commute mode shares for modes other than driving alone; while areas to the north, such as Pinole and Hercules, have higher drive-alone commute mode shares. This is consistent with the auto-ownership patterns discussed in Section 4.3.



Sources: LEHD 2015

Figure 22: Employment Locations for West County Residents (LEHD Data)

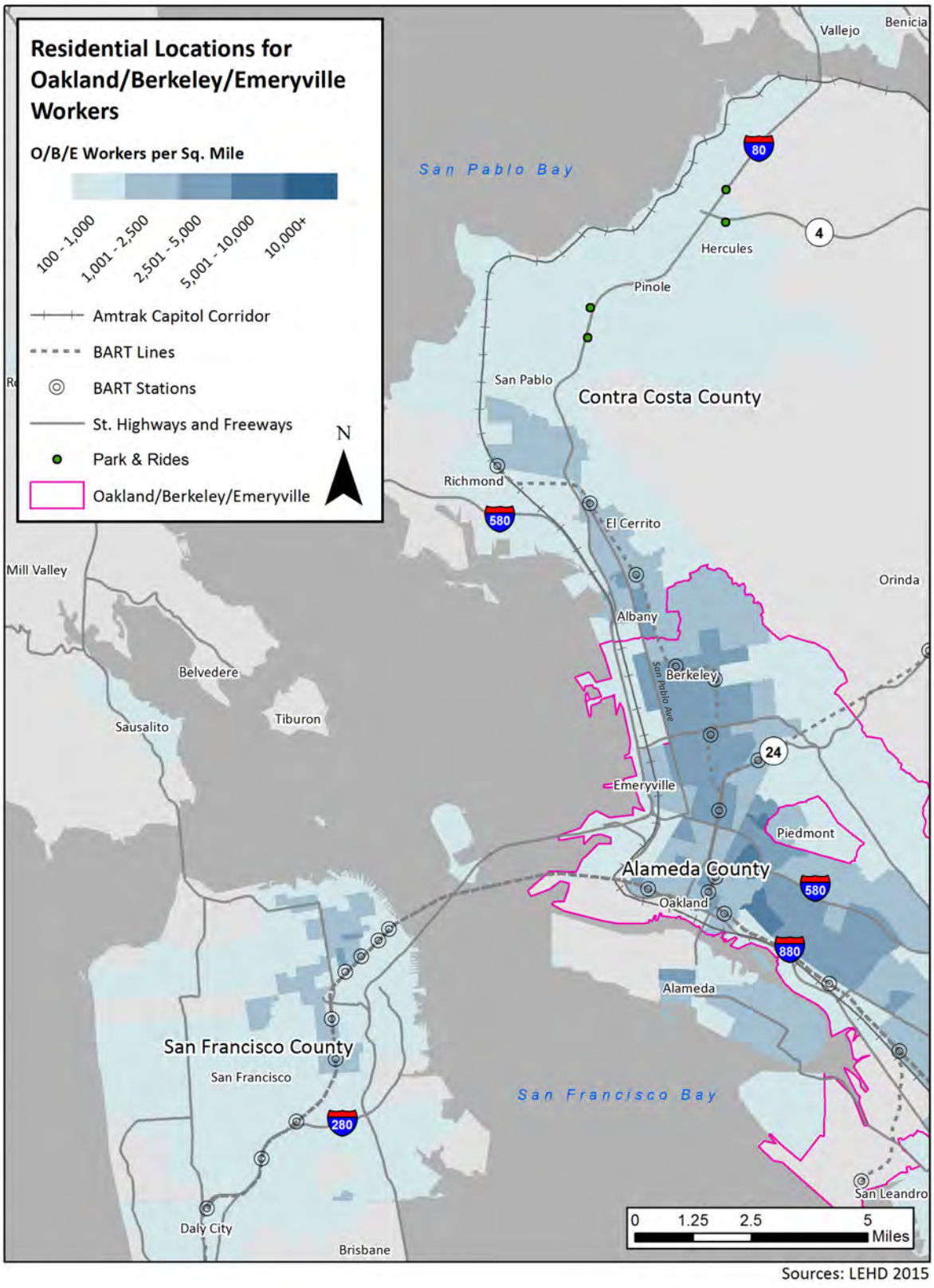


Figure 23: Residential Locations of Oakland/Berkeley/Emeryville Employees (LEHD Data)

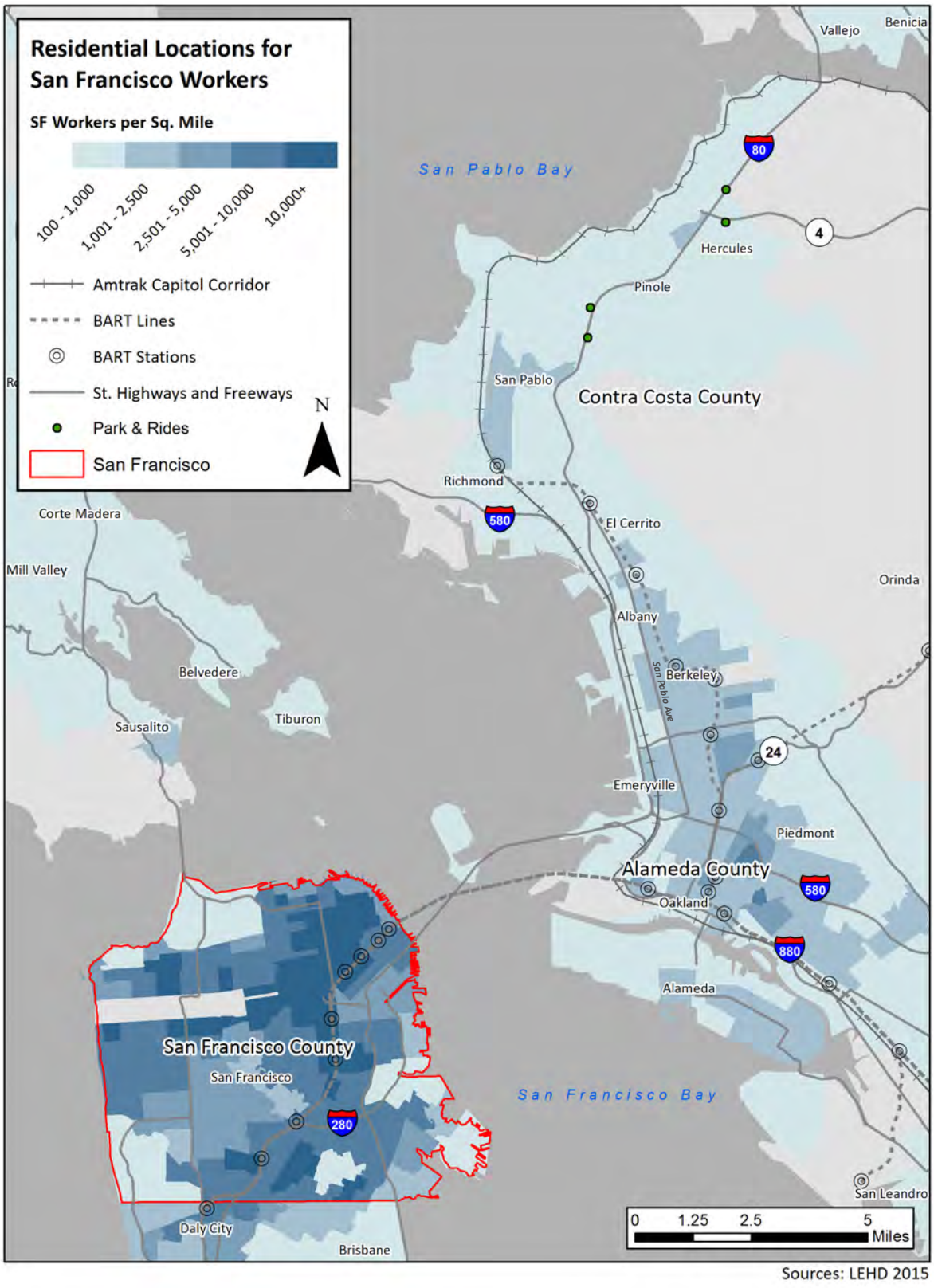
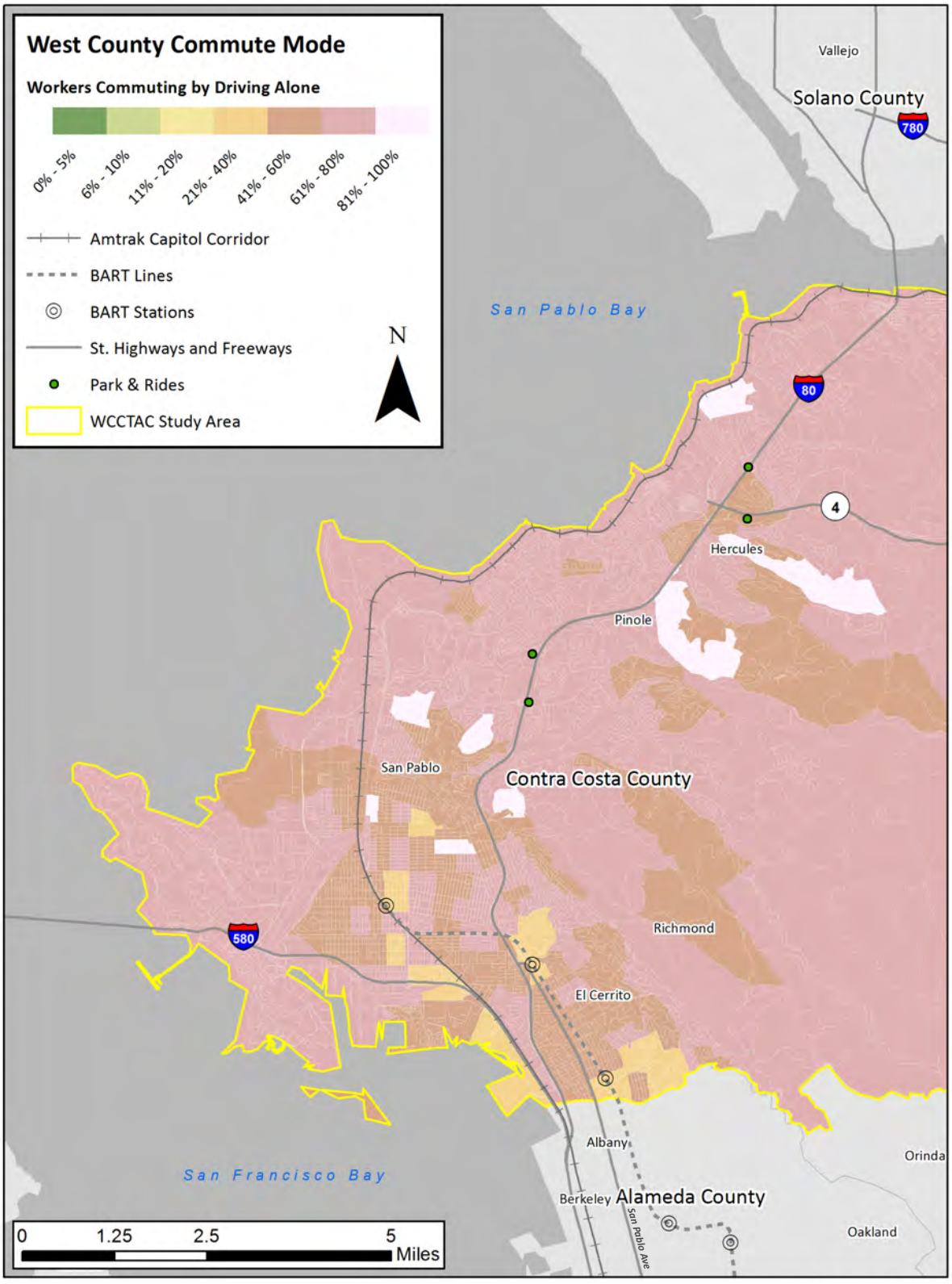
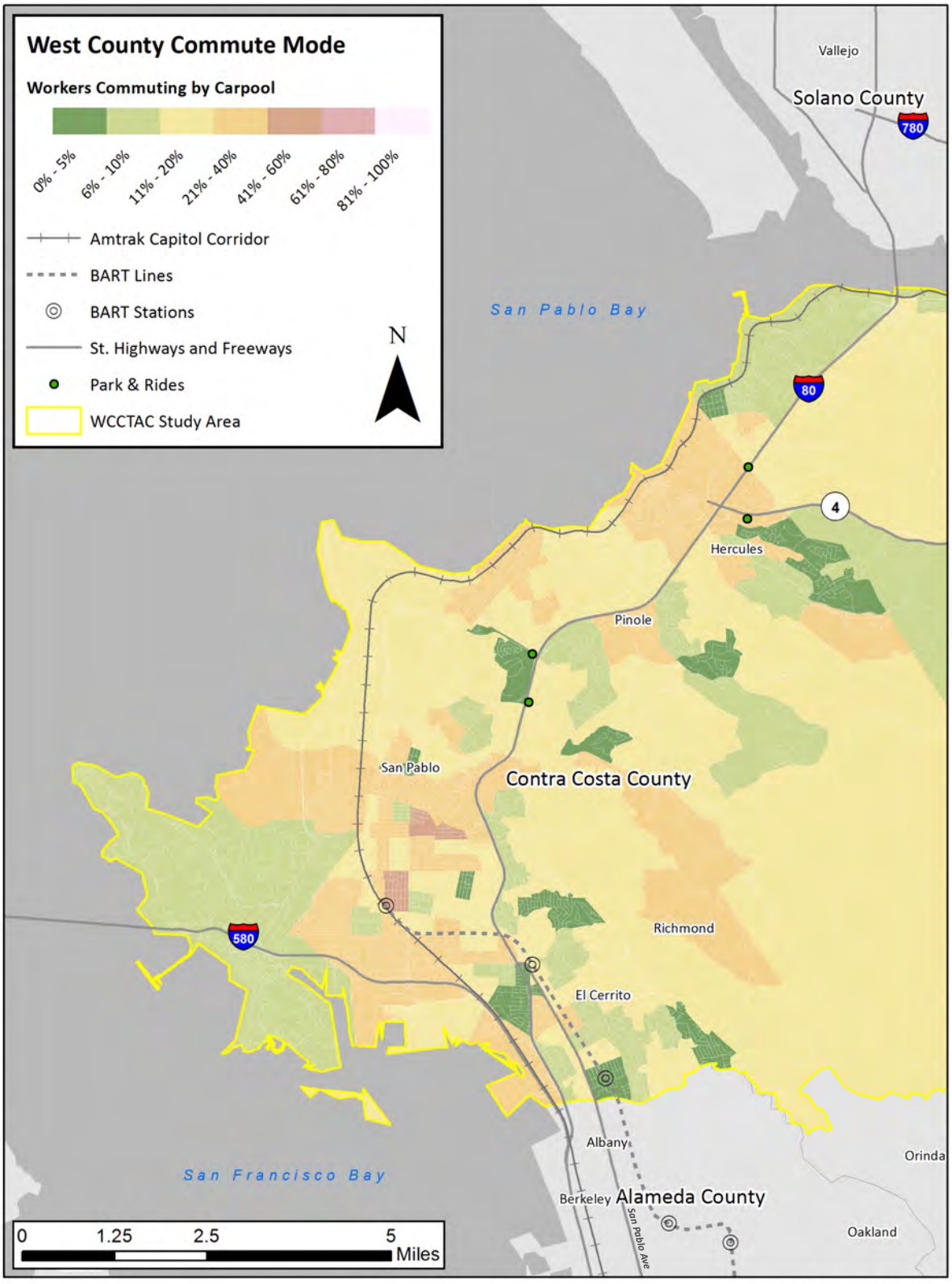


Figure 24: Residential Locations of San Francisco Employees (LEHD Data)



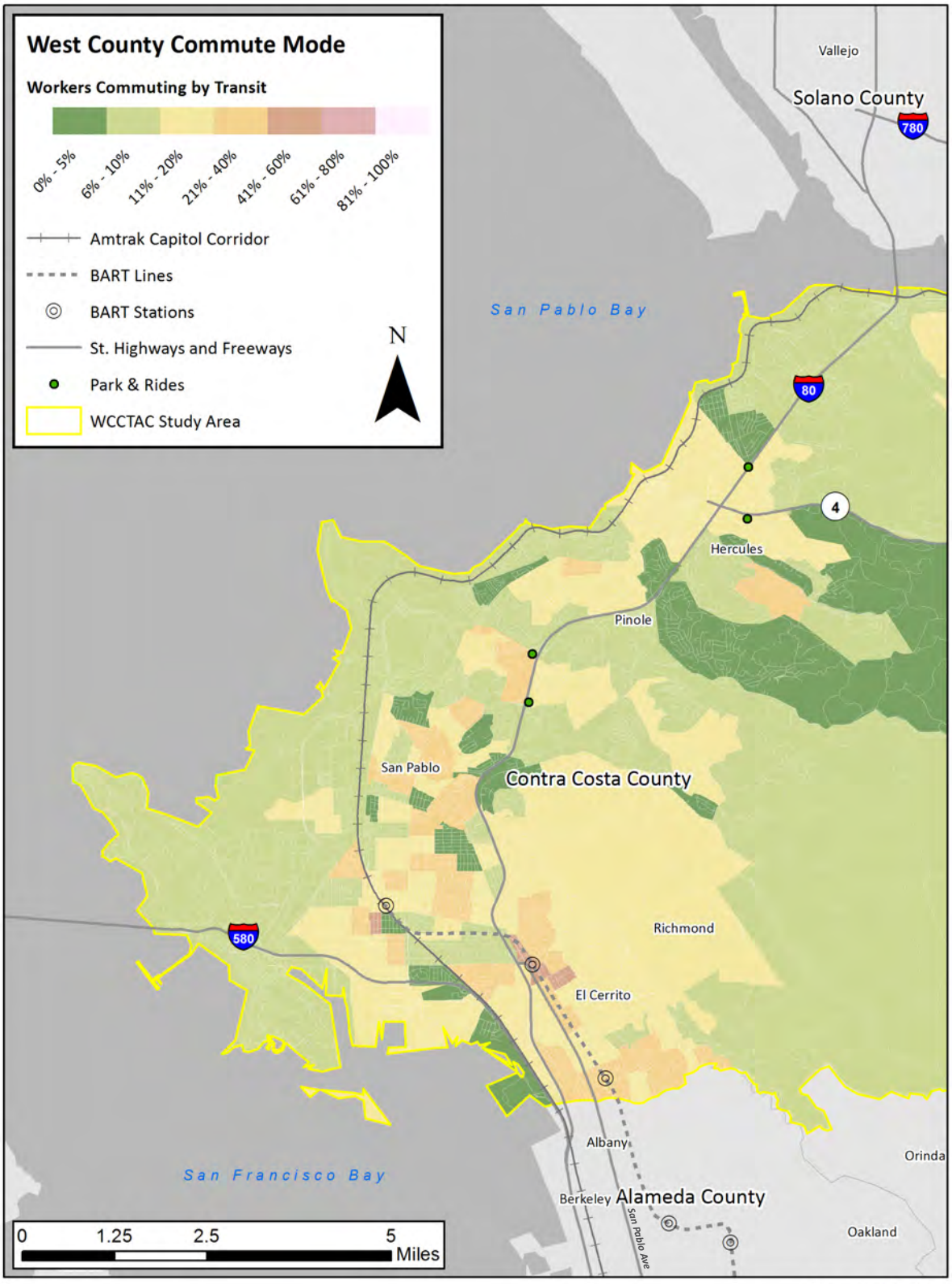
Sources: ACS 2016

Figure 25: Percent of Commuters in Study Area Who Drive Alone (US Census Data)



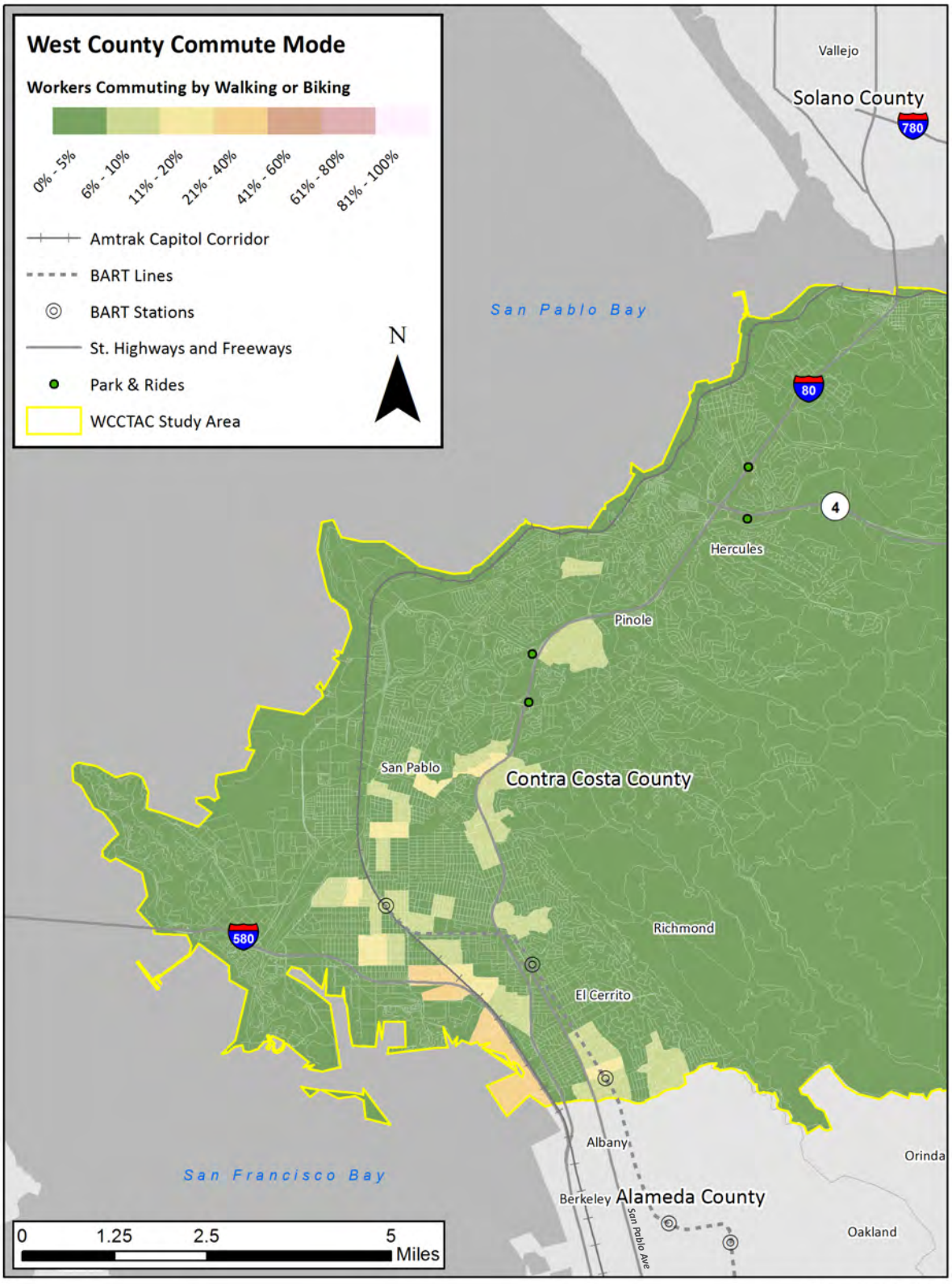
Sources: ACS 2016

Figure 26: Percent of Commuters in Study Area Who Carpool (US Census Data)



Sources: ACS 2016

Figure 27: Percent of Commuters in Study Area Who Use Transit (US Census Data)



Sources: ACS 2016

Figure 28: Percent of Commuters in Study Area Who Walk or Bike (US Census Data)

5.2 Existing Transit Market Share

Since express bus services primarily serve commuters, the market share of an express bus service can be determined by dividing ridership by the number of potential commuters that could use the service.

LEHD employment data, combined with information on access distance from on-board surveys, can be used to determine the number of potential commuters within the "capture area" of an express bus service. The WestCAT on-board survey found that, on average, Lynx riders who drive to access the bus average of 2.6 miles (i.e, the distance from home to their stop). All Lynx riders, once they reach Salesforce Transit Center, have an average walk time to their non-home destination of 9.3 minutes. Per TCRP Report 95, 50 percent of park-and-ride lot users live within 2.5 miles of the lot, and 85 percent of users live within a capture area with a parabolic shape, with more users being captured "upstream" from the facility, in the opposite direction of major commute flows[1].

To approximate the capture area of express bus service, areas within 2.5 miles of park-and-ride lots and areas within ¼ mile from other express bus stops were considered to be within the residential capture area, and areas within ½ mile of Salesforce Transit Center were considered to be within the destination capture area. People who live within the residential capture area and work within the destination capture area are the potential primary market for express bus service.

Since on-board survey data indicated that the vast majority of AC Transit Transbay riders walk to access the bus, it was assumed that Transbay buses are not capturing the park-and-ride market. Per LEHD employment data, a total of 989 workers live within ¼-mile of an AC Transit Transbay stop and also work within ½ mile of the Salesforce Transit Center. An average of 537 daily boardings occur at these stops, indicating that AC Transit Transbay is capturing 54% of the potential market for express bus service in the areas that it serves in West County.

On-board survey data for WestCAT indicated that Lynx riders include a mix of people who walk to access their stop and people who access the service via park-and-ride. Per LEHD employment data, a total of 811 workers live within 2.5 miles of park-and-rides served by Lynx who also work within ½-mile of the Salesforce Transit Center. Utilizing access mode share information from the WestCAT on-board survey, it was estimated that there are 377 daily park-and-ride users on the Lynx service, which represents a capture of 47% of the potential commute market.

Identifying the market capture of existing services informs the potential market capture of new express bus services. Express bus service in the area captures a substantial portion of the commuters whose home and work destinations are both within walking distance of an express bus stop. If new express routes proposed as part of this Plan include local segments, the stops and alignments of those segments should be selected so that they are within walking distance of residents who commute to the express destination. The data also tells us the potential market capture of park-and-ride locations; if new express routes proposed as part of this Plan are designed as point-to-point services between park-and-rides and a commute destination, park-and-ride locations should be selected assuming that they will capture a similar portion of the travel market as existing services.

5.3 Travel Time Comparison

Table 5 shows a comparison of travel times between automobiles and transit. Automobile travel times shown are based on Google Maps estimates of travel times to arrive at the trip destination by 8:30 AM on a Tuesday. Transit travel times shown are based on scheduled departure and arrivals times in the same timeframe. Transit travel times for "one-seat rides" for a particular origin-destination pair are shown separately from travel times for transit trips requiring at least one transfer. As can be seen in the table, transit travel times are most competitive for trips

[1] "TCRP Report 95: Park-and-Ride/Pool," Transportation Research Board, 2004. http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_95c3.pdf

where a one-seat ride is available; transit travel times are also competitive for trips where the destination is located near an existing BART station.

The travel times shown for trips going from Arlington Boulevard & Potrero Avenue in El Cerrito to Salesforce Transit Center may help inform the low levels of ridership on the northern portions of Lines G and H, as shown in Figure 10. Both of these lines have lengthy segments on local roads which increase travel time, thus making these services less competitive when compared to travel times by automobile or by taking a local bus to BART. Additionally, the northern portions of these lines, particularly Line H, serve higher-income areas with few transit-dependent households.

Table 5: Auto vs. Transit Travel Time Comparison

Origin	Destination	Auto Travel Time	One Seat Ride		Transit Trips Requiring Transfers		
			Travel Time	Transit Services	Travel Time	Transit Services	Transfers Required
Hercules Transit Center	Salesforce Transit Center (San Francisco)	0:55-1:40	0:43	Lynx	0:55	JR/JL/JX/JPX, BART (Embarcadero)	1
	El Cerrito del Norte BART	0:20-0:45	0:16-0:23	JX/JPX	-	-	-
	Jack London Square (Oakland)	0:40-1:15	-	-	1:04	JR/JL/JX/JPX, BART, Broadway Shuttle	1-2
	14th St & Broadway (Oakland)	0:35-1:15	-	-	0:43-0:50	JR/JL/JX/JPX, BART (12th Street/Oakland City Center)	1
	San Pablo Ave & Powell St (North Oakland)	0:30-1:10	-	-	0:48-0:53	JR/JL/JX/JPX, 72R	1
	San Pablo Ave & University Ave (Berkeley)	0:30-1:05	-	-	0:48	JR/JL/JX/JPX, 72R	1
Richmond Parkway Transit Center	Salesforce Transit Center (San Francisco)	0:45-1:30	0:46-0:50	LA	0:49-1:02	JR/JL/JX/JPX, BART (Embarcadero)	1
	Jack London Square (Oakland)	0:30-1:00	-	-	0:52	JR, BART (12th Street/Oakland City Center), Broadway Shuttle	1-2
	14th St & Broadway (Oakland)	0:30-1:00	-	-	0:40	JR, BART (12th Street/Oakland City Center)	1
	San Pablo Ave & Powell St (North Oakland)	0:26-0:55	-	-	0:49-0:57	JL, 72R	1
	San Pablo Ave & University Ave (Berkeley)	0:22-0:50	-	-	0:49	JR, 72R	1
I-80 Park & Ride at Hilltop Dr	Salesforce Transit Center (San Francisco)	0:45-1:25	1:10	LA	1:15	JL, BART (Embarcadero)	1
Tennent Ave & San Pablo Ave (Pinole)	Salesforce Transit Center (San Francisco)	0:50-1:40	-	-	0:55-1:14	JL, Lynx JPX, BART (Embarcadero)	1
Tulare Ave & San Pablo Ave (San Pablo)	Salesforce Transit Center (San Francisco)	0:40-1:20	0:51	L	0:49	72R, BART (Embarcadero)	1
Moeser Ln & San Pablo Ave (El Cerrito)	Salesforce Transit Center (San Francisco)	0:35-1:10	0:36	L	0:47	72R, BART (Embarcadero)	1
Arlington Blvd & Potrero Ave (El Cerrito)	Salesforce Transit Center (San Francisco)	0:40-1:15	0:55	H	0:53	Line 7, BART (Embarcadero)	1

6 FINDINGS

The following are key findings based on the review of previous studies and planning work in the study area:

- Previous studies have made recommendations of providing new or better express bus access to San Francisco and the East Bay. The West Contra Costa County High-Capacity Transit study identified a recommended set of routes providing access to Oakland, Berkeley, and Emeryville. The WestCAT SRTP identified demand for a similar set of potential express bus destinations.
- The connectivity needed to distribute and collect riders in the East Bay may be made more feasible from a combination of existing and proposed services (e.g. EBOTS) or existing and proposed transit-related improvements, such as the signal improvements made as part of the I-80 SMART Corridor Project or potential bus improvements to San Pablo Avenue as part of the San Pablo Avenue Complete Streets Study. As recommendations are developed for this Plan, coordination and further study will be required to identify opportunities for other transit services to connect to proposed express bus routes.

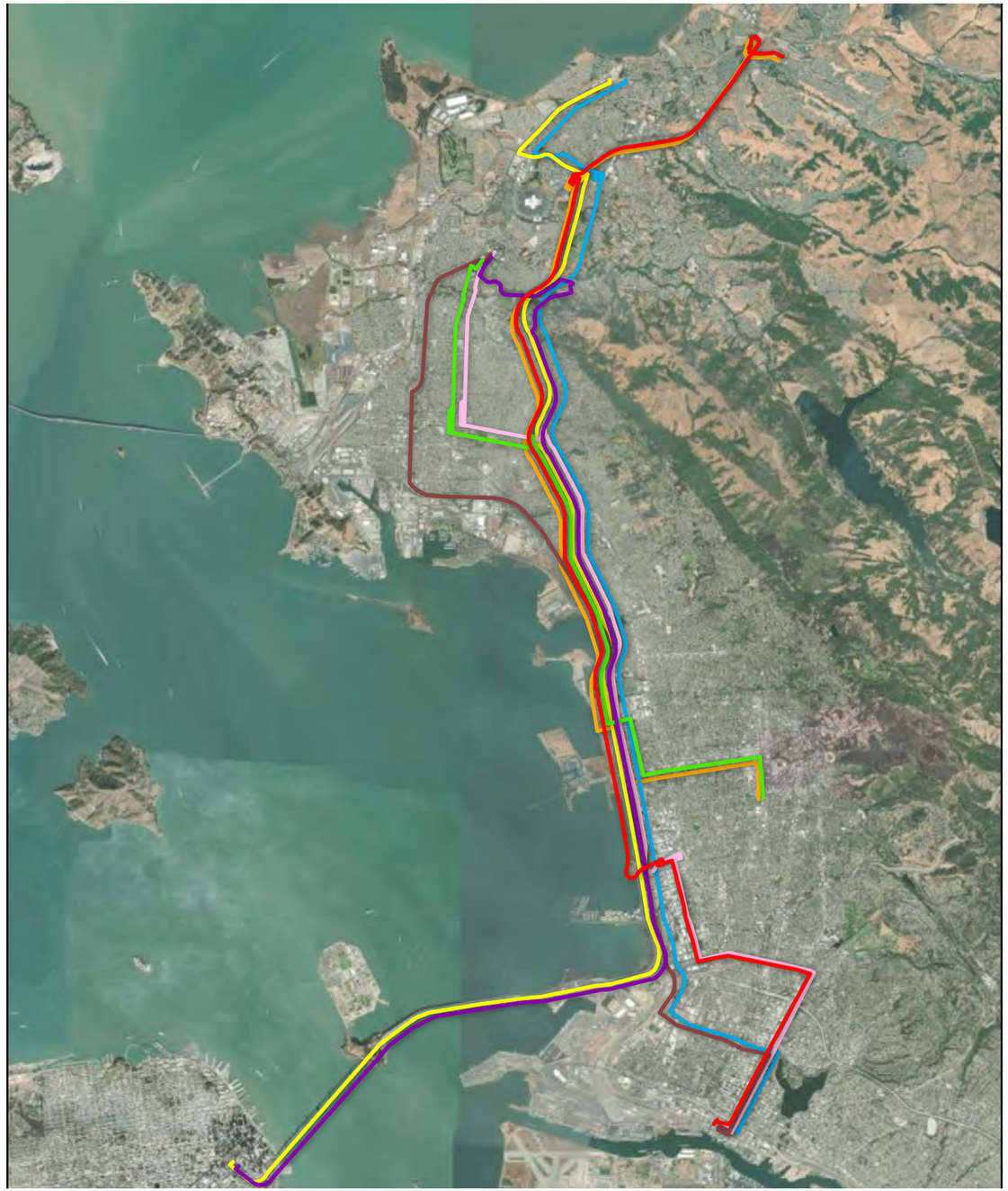
The following are key findings based on the travel data analyzed in this memorandum:

- Existing express bus services in the study area serve both choice riders (riders who have access to a car but choose to ride transit anyway) and transit-dependent riders (riders with no access to a car who must ride transit).
- On-board survey data shows that most WestCAT riders have access to a car, whereas only half of riders on AC Transit Transbay routes have automobile access. This is reflective of the service areas of these service providers. Zero-auto households are more concentrated in San Pablo, Richmond, and El Cerrito, which is also the area served by AC Transit Transbay routes. WestCAT's express and transbay routes serve Hercules, Pinole, and Tara Hills, where zero-auto households are less prevalent.
- Existing AC Transit express bus services have a high market capture (54%) of people who live and work within walking distance of both their origin and destination stop.
- The existing WestCAT Lynx express bus service captures 47% of people who live within driving distance of Lynx-served park-and-rides and work within walking distance of the Salesforce transit center.
- Many of the existing express bus services in the study area essentially have a local segment and an express segment. Along the local segments of these routes, buses make frequent stops at curbside bus stops spaced approximately every ¼ to ½ mile. The express segments of these routes connect the local segment to an express destination. In the case of AC Transit Transbay and WestCAT Lynx service, this express destination is the Salesforce Transit Center in San Francisco. In the case of WestCAT express routes (Routes JR/JL/JX/JPX), the express destination is El Cerrito del Norte BART. Potential new express bus services should take into account the fact that local segments will better capture transit-dependent commuters within walking distance, while routes serving park-and-rides will better capture car-owning choice riders within driving distance.
- Lines G and H see low ridership at stops near their northern termini; this could be due to a number of factors. The northern portions of route H serve primarily high-income areas with few transit-dependent residents. Additionally, both of these lines have lengthy segments on local roads which increase travel time, thus making these services less competitive when compared to travel times by automobile or BART.
- Transit travel times are most competitive with automobile travel times when a one-seat ride is available and in cases where a trip destination is located near an existing BART station.
- The following are major commute destinations for study area residents; these should be considered for destinations for a potential express bus service:

- San Francisco
  - Market Street Corridor
  - Financial District
  - South of Market Neighborhood ("SoMa")
  - UCSF Parnassus Campus
  - Northern portions of the Mission District
- Oakland
  - Jack London Square
  - Downtown Oakland
  - Uptown Oakland
  - Broadway/MacArthur Boulevard Area
- Berkeley
  - Downtown Berkeley
  - UC Berkeley Campus
  - North Berkeley
- Berkeley/Emeryville
  - Commercial area approximately bound by University Avenue, San Pablo Avenue, I-80, and I-580

C.

OUTREACH SUMMARIES AND MATERIALS



PLACEWORKS

MEMORANDUM

DATE February 21, 2019

TO Kimley-Horn and WCCTAC

FROM Brendan Hurley and Carey Stone, PlaceWorks

SUBJECT Community Outreach Round 1 – Express Bus Implementation Plan

Project Background

The memo provides a summary of Round 1 outreach efforts for the WCCTAC Express Bus Implementation Plan (Plan). Round 1 outreach efforts focused on West Contra Costa County commute trends and preferences, desired bus and stop amenities, and preferred headways. Round 1 outreach began in September 2018 and concluded in December 2018.

The memo covers the following topics:

- Spreading the Word
- Public Input Channels
- Analysis of Survey Results
- Next Steps
- Conclusions and Recommendations

Spreading the Word

To ensure the community was aware of the planning process, PlaceWorks created the following items as described below:

- Project Webpage
- Social Media
- Project Fact Sheet and Postcard
- Press Releases and News Articles

PROJECT WEBPAGE

PlaceWorks published the Express Bus Implementation Plan project webpage on the WCCTAC website in October 2018. The webpage provides information in both English and Spanish. The webpage includes the project timeline, a way to subscribe to the project mailing list, and online engagement tools, which are described below. The webpage address is included on both the project fact sheet and postcard, and people were encouraged to visit the webpage to find out more information about the project and WCCTAC as an organization.

PlaceWorks notified potential riders and interested parties about the webpage through social media, the fact sheet, postcard, and press releases, as well as emails to partner jurisdictions and neighborhood associations, as described below.

SOCIAL MEDIA

Working with WCCTAC and Kimley-Horn, PlaceWorks posted information about the Express Bus Implementation Plan on Twitter, Facebook, and Instagram.

PlaceWorks used paid advertising to announce the availability of the online surveys via two promoted Facebook posts. The first promoted post reached 12,300 people with 992 engaging in the post (this is the total number of likes, comments, shares, post clicks, link clicks and image clicks). The second promoted post reached 4,645 people with 290 people engaging in the post.

PROJECT FACT SHEET AND POSTCARD

In addition to social media efforts, PlaceWorks created a project fact sheet and postcard that provided information in an easy-to-read format in both English and Spanish. The fact sheet described the benefits of an express bus, and the project timeline, scope, and outreach methods, including the project website and online engagement links. The postcard included a short project description and invited recipients to provide feedback through the project webpage and online engagement site.

PlaceWorks emailed the fact sheet to major employers and government agencies to spread awareness of the project. The following jurisdictions and groups received the fact sheet: Alameda County, the Cities of San Pablo, Pinole, Hercules, Richmond, Berkeley, and El Cerrito, and the Richmond and Bay Front Chambers of Commerce. PlaceWorks emailed the fact sheet to the following large employers: Bayer, UCSF, Alta Bates, Sutter Health, Kaiser Permanente, John Muir Health (through Commute Solutions), and Novartis.

PlaceWorks printed and mailed the postcard to 27,699 households in West Contra Costa County on November 26, 2018. Table 1 identifies the number of postcard recipients per city.

Table 1: Postcard Recipients

City	Number of Addresses
El Sobrante	257
Hercules	2,314
Pinole	2,852
Richmond	13,572
Rodeo	1,286
San Pablo	7,418
Grand Total	**27,699**

Postcard recipients were determined based on the following methodology:

1. All addresses within El Sobrante, Hercules, Pinole, and Richmond that are within BOTH an SB 535 Disadvantaged Community AND within Census block groups that have a low-income population greater than 1,000 people per square mile.

2. All addresses that fall within Census block groups that have a low-income population greater than 2,500 people per square mile.

3. All addresses in Hercules (this step was added because the previous two steps did not include any addresses in Hercules).

PRESS RELEASES AND NEWS ARTICLES

PlaceWorks also submitted press releases and short news articles to notify people about the project and to encourage them to take the online surveys. These were provided to:

- 15 news organizations
- City Manager newsletters at six cities
- The 26 Richmond Neighborhood Councils

Out of the 46 organizations reached, the following posted information about the project either through a news article, social media and/or e-newsletter:

- E'ville Eye
- Richmond Standard
- Cities of El Cerrito, Hercules, Richmond, Pinole, and San Pablo
- Richmond Chamber of Commerce
- Four Richmond Neighborhood Associations: Parchester Village Neighborhood Council, Point Richmond Neighborhood Council, Richmond Heights Neighborhood Council, and Richmore Village/Metro Square Neighborhood Council
- El Sobrante Municipal Advisory Council

As shown in Appendix A, all of these organizations, were contacted at least twice in an effort to elicit as many responses as possible.

Public Input Channels

This section describes the outreach methods used to generate feedback on the project.

ONLINE ENGAGEMENT

For Round 1 Outreach, PlaceWorks created four online tools to engage potentially interested riders, with both English and Spanish versions:

1. Project Survey. The Project Survey included 11 questions that asked respondents for basic information about their commutes, such as where they are commuting to and from, how long it takes them, and how they currently travel.

2. Ranking Exercise. The Ranking Exercise allowed respondents to rank the most likely factors that would influence them to use the express bus to commute.

3. Demographics Survey. The Demographics Survey asked questions about age, race/ethnicity, residence location, and household income.

4. Comment Forum. The Comment Forum invited people to share their ideas or comments about the project.

There were 471 responses to the Project Survey, 238 responses to the Ranking Exercise, 196 responses to the Demographics Survey, and 46 entries in the Comment Forum (with six Project Surveys and two Ranking Exercises submitted in Spanish). Across the four online tools, nearly 950 responses were collected. These exercises concluded on December 21, 2018 except that the general Comment Forum remains open to collect ongoing input.

POP-UP EVENTS

In Round 1, PlaceWorks held two pop-up events to notify people about the project, answer questions, and collect responses to the online surveys via iPads with internet access. Pop-up booth materials included the project postcard, intercept survey, 24"x36" service area map, and giveaways such as reusable shopping bags, key chains, and pens donated by WCCTAC and pencils donated by WestCAT.

The first pop-up occurred at the weekly Pinole farmer's market on Saturday, December 1, 2018. Despite cold and rainy weather, PlaceWorks staff spoke to about 35 people interested in the project and collected 25 survey submittals. On Sunday, December 2, 2018, PlaceWorks held a second pop-up event at the Hercules community tree lighting. At the WCCTAC booth, kids decorated holiday busses and bookmarks while adults filled out surveys. PlaceWorks collected another 25 submittals.

INTERCEPT SURVEYS

Kimley-Horn and PlaceWorks also conducted six separate intercept surveys, and an analysis of the survey results follows this section of the memo.

Transit Intercept Surveys

Kimley-Horn performed intercept surveys at four transit center locations: El Cerrito Del Norte BART Station, Hercules Transit Center, Richmond Parkway Transit Center, and Richmond BART Station. The surveys were conducted in person via internet-connected iPads during morning and evening commute times over a period of three days, November 14, 15, and 28, 2018. A total of six three-hour blocks were completed. During this time, 192 surveys were collected online with 20 more completed on paper copies that were later inputted online. Project postcards with the survey link were distributed to people who didn't have the time to complete the survey on-site.

Emeryville Intercept Surveys

PlaceWorks conducted two additional intercept surveys to solicit input directly from employees in Emeryville. The first was conducted on December 12, 2018 from 7:30 a.m. to 9:30 a.m. on board the Emery Go Round. The surveyors announced the purposed of the project, asked if anyone was from Contra Costa County, and then rode with respondents while they filled out the survey. Out of roughly 150 people approached, only three completed surveys, as most riders were not West Contra Costa County commuters.

On December 13, 2018, the surveyors walked between 65th Street and Powell Street along Hollis Street from 11:30 a.m. to 1:30 p.m. Surveys were conducted at major intersections and in front of

popular lunch spots. Out of roughly 140 people approached, eight people from Contra Costa County filled out a survey. Again, the majority of people contacted were not West Contra Costa County commuters.

An interesting comment received is that Emeryville will be implementing stricter parking measures (like meters), so this respondent was interested in the express bus service as an alternative to both driving and parking. PlaceWorks handed out flyers to everyone that took the survey or expressed interest in the project.

Large Employer/Employee Outreach

PlaceWorks contacted about 30 companies located in Mission Bay, Oakland, Emeryville, and Berkeley in order to collect data on ways to best encourage their employees to commute by express bus. Appendix B includes lists the companies contacted. One or two companies from each portion of the project study area expressed interest in learning more about the project. Due to employee time constraints and the geographical spread of these companies, no company agreed to an in-person focus group on site for Round 1.

PlaceWorks held a project webinar on December 6, 2018 to reach employees at companies that have expressed interest in the project. The webinar included polling features to make it interactive and engaging for participants. Representatives from four companies attended the webinar, and each was asked for follow-up data and to see if their company would be interested in hosting an in-person focus group. Pixar in Emeryville and Commute Solutions at John Muir Health in Berkeley have shown interest in hosting an in-person focus group.

Analysis of Survey Results

This section summarizes the survey results and is organized by each survey type.

PROJECT SURVEY

PlaceWorks performed two sets of analysis: data from all survey respondents, and only responses from West Contra Costa Commuters (commuters from San Pablo, Richmond, Pinole, Hercules, and unincorporated communities going to destinations in Berkeley, Oakland, Emeryville, and San Francisco). West Contra Costa Commuters comprised 72 percent of all respondents. Since the majority of survey respondents are from West Contra Costa County, the results did not change substantially between the two datasets. Accordingly, the following analysis primarily presents responses from the entire dataset; however, any significant differences between the two datasets are noted.

Transit Riders vs. Non-Transit Riders Methodology

To identify trends germane to automobile versus transit commuters, PlaceWorks divided responses into three categories: transit commuters, automobile commuters, and people that took a combination

of these two modes. To determine these three groups, PlaceWorks employed the following assumptions based on how respondents answered Question 4 of the Project Survey:

1. If respondents marked that they took local bus, express/commuter bus, or BART, they are counted as a transit commuter. All respondents who indicated that they biked, walked, or scootered to work also indicated they commuted by some form of transit. Therefore, transit riders, pedestrians, cyclists, and scooter riders all counted as transit commuters.

2. If respondents marked that they drive alone, carpool, or Lyft/Uber, they were counted as an automobile commuter.

3. If respondents marked that they took both transit and automobile, they were considered to be combination commuters.

Throughout this section, each Project Survey question is evaluated by transit riders, non-transit riders, and combination commuters.

Commute Start/End Points

The first two questions asked about commute origins and destinations. Results to these questions are shown in Figures 1 and 2. Since nearly half of the total responses were completed at the Hercules transit station during the morning commute, it is not surprising that 55 percent of respondents started their commute in Hercules. The second largest commute origin, at 15 percent, was Richmond. Commuters originating from Pinole were the third highest, representing 12 percent of all respondents.

The majority of respondents, 52 percent, were commuting to San Francisco. Oakland and Berkeley were the next most popular destinations, with 17 percent and 13 percent of all respondents, respectively. There was a slight difference in the destinations of West Contra Costa Commuters from the rest of the survey respondents, with 60 percent commuting to San Francisco, 20 percent to Oakland, 15 percent to Berkeley, and 5 percent to Emeryville.

Major Takeaway:

- 45 percent of surveys received (212 out of 471) were collected during intercept surveys at the Hercules Park in Ride. As such, transit riders from Hercules that are going to San Francisco for accounted for a significant portion of the surveys collected.

Arrival Time for Work/School

Question 3 asked respondents what time they need to arrive at work/school. Approximately 23 percent of respondents need to arrive at work by 8:00 a.m., followed by 17 percent by 9:00 a.m., and 11 percent by 8:30 a.m. as shown on Figure 3.

Major Takeaway:

- About half of commuters need to arrive by 9:00 a.m.

Figure 1: Q1 In what City does your daily commute begin?

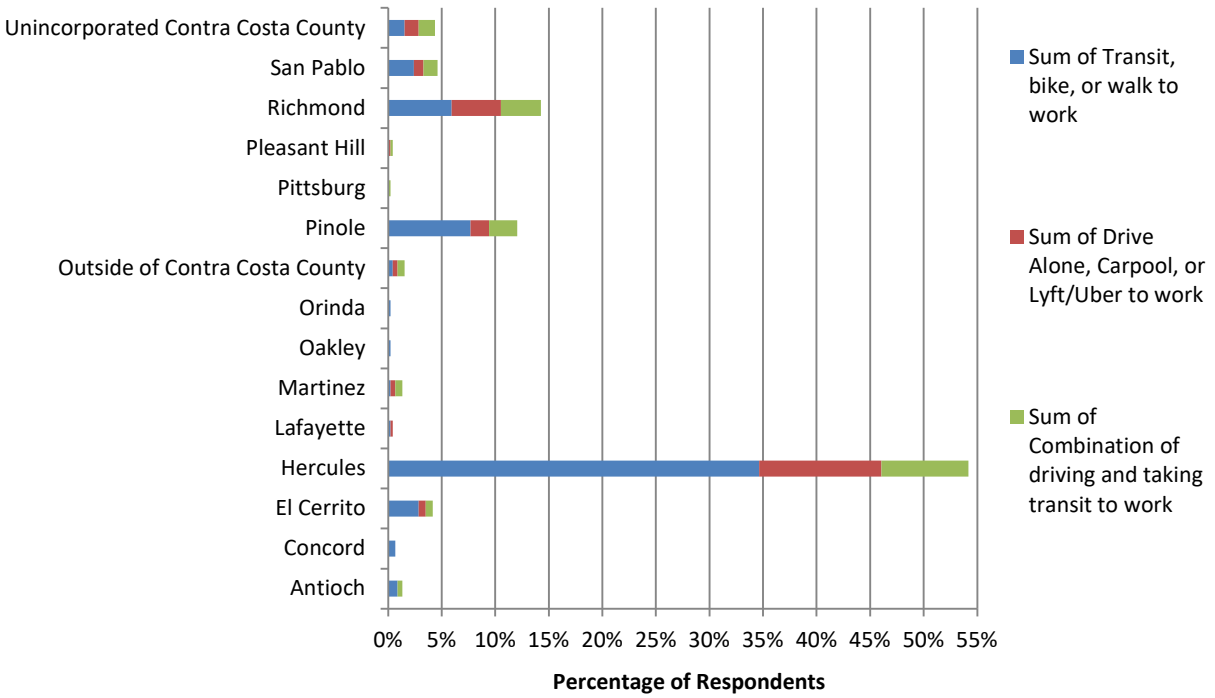


Figure 2: Q2 In what City is your place of employment/schooling?

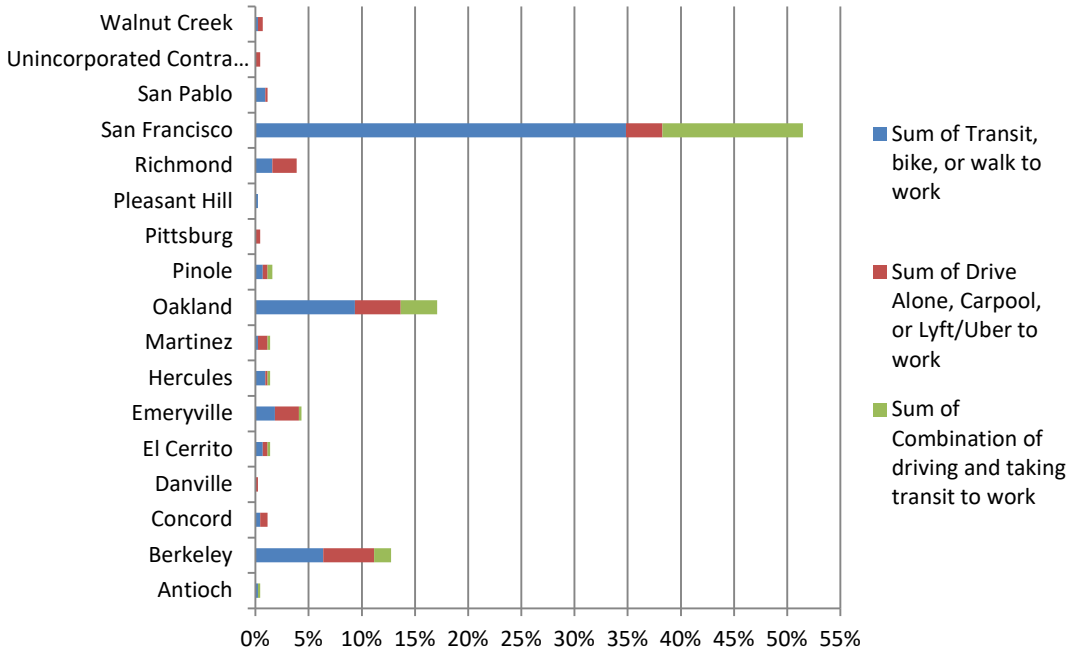
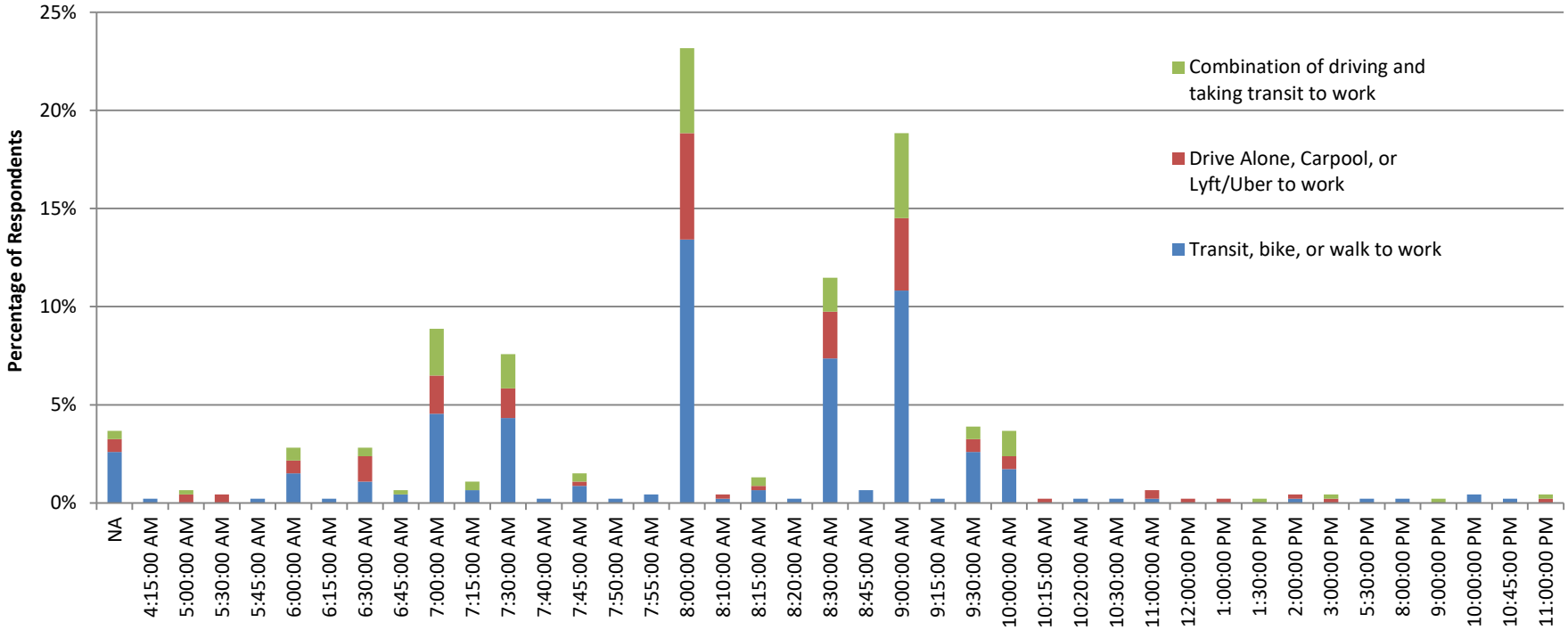


Figure 3: Q3 What time do you need to arrive at work/school?

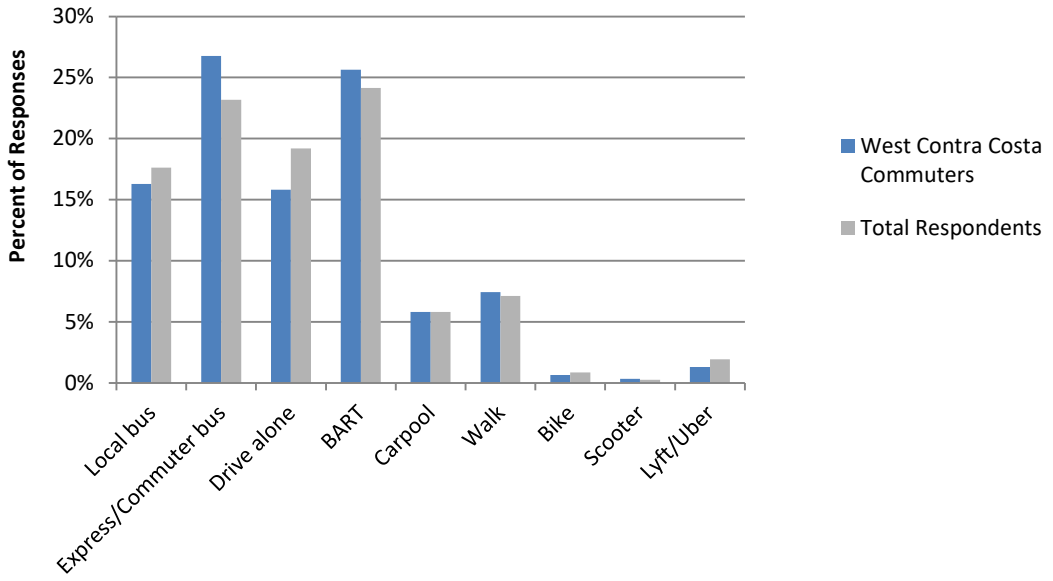


Note: 18 people responded with vague answers, which are labeled as “Not Available” (“NA”).

Transportation Mode Split

As shown in Figure 4, West Contra Costa commuter respondents take express/commuter buses more and have lower rates of driving alone compared to the total survey population. As mentioned above, because many of the responses were taken at transit centers or stations, a follow-on survey at locations could yield different commute mode choices.

Figure 4: Q4 How do you make your commute today?



Major Takeaway:

- Most respondents rely on transit to commute to school or work.

Commute Duration

Figures 5 and 6 show the survey respondents' average commute times. The majority of respondents, approximately 65 percent, had 46 to 90 minute commutes for both the AM and PM commute. A higher percentage of transit users had longer commutes compared to other modes. Many respondents reported longer afternoon commutes.

Major Takeaways:

- Most respondents have a commute time duration between 46 and 90 minutes.
- Commute times generally increase in the afternoon.

- Respondents that take public transit or a combination of modes usually have a longer commute time compared to those who drive alone.

Figure 5: Q5 Door to door, how long does your commute take in the AM?

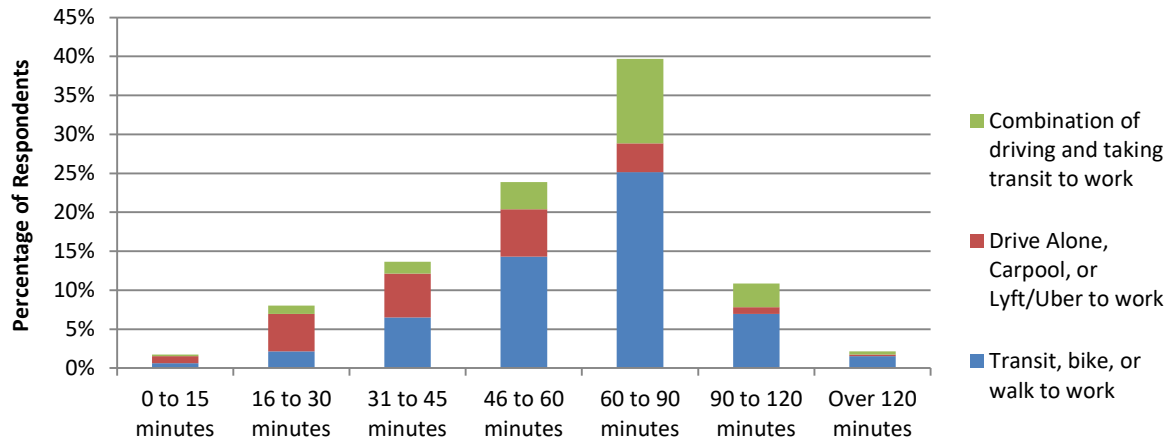
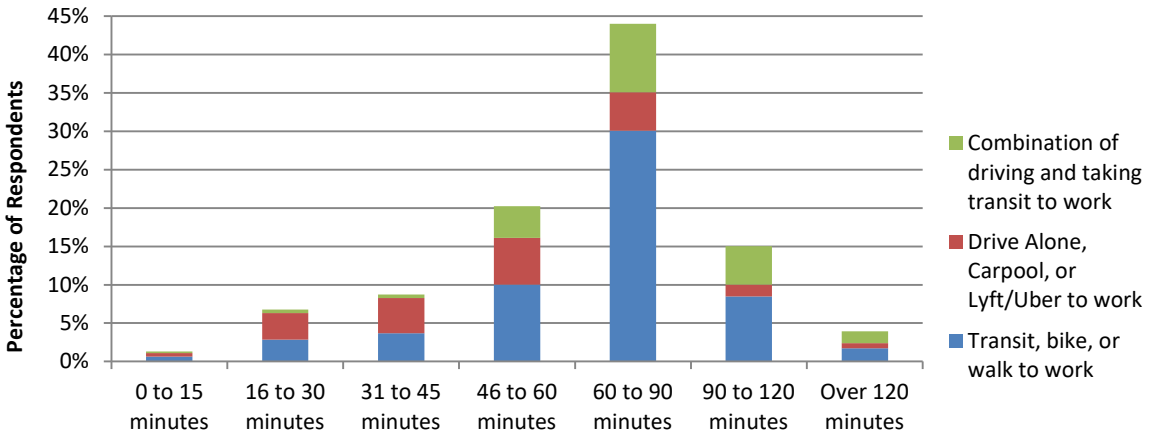


Figure 6: Q6 Door to door, how long does your commute take in the PM?

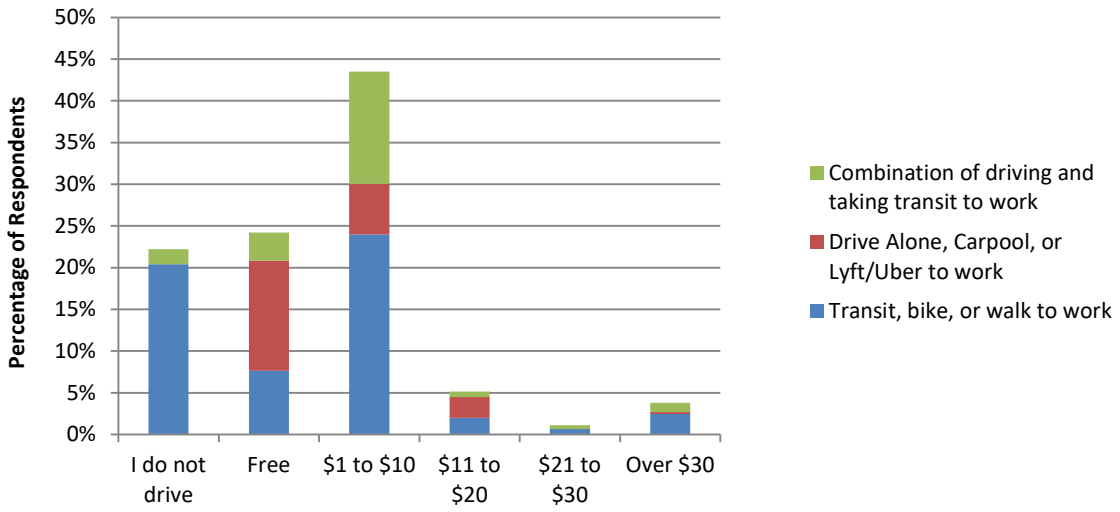


Parking

This section looks at the cost people pay for parking. Figure 7 shows that of the respondents who pay for parking, 44 percent paid between $1 to $10 to park, and of this group, most take public transit or a combination of driving and transit for their commute. Among the respondents who park for free, 13 percent drive alone, whereas only 10 percent commute by transit or some combination thereof. Of

the West Contra Costa County respondents who park for free, 7 percent drive alone and 8 percent commute by transit or some combination thereof.

Figure 7: Q7 If you now drive for any portion of your commute, how much do you pay for parking each day?



Major Takeaways:

- The average cost to park for survey respondents was between $1 and $10 a day.
- Of the respondents who park for free, 13 percent drive to work compared to 10 percent who took transit or a combination of transit and driving.

Non-Commute Travel Needs

As shown in Figure 8, only 9 percent of respondents need access to a car while at work or school.

Figure 8: Q8 Do you need a car during the day once you've reached your place of employment?

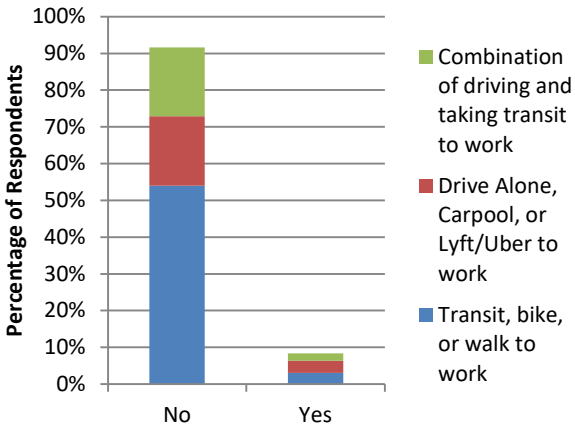
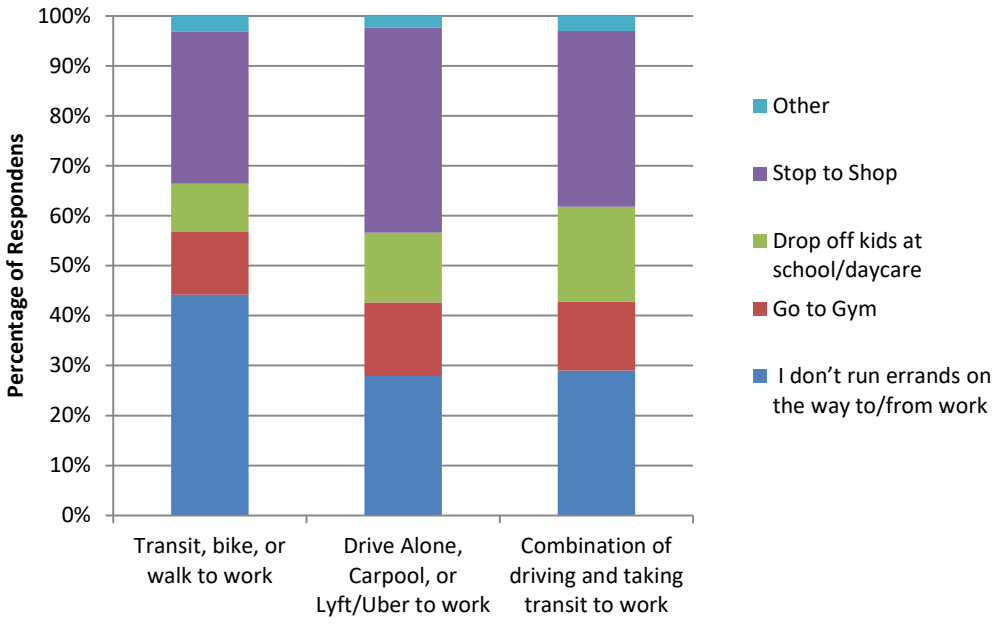


Figure 9 depicts whether respondents make errands to/from work and, if so, what type of errands they make. Approximately 62 percent of total respondents combine errands with commuting. The majority of respondents, who do not make errands to/from work or school, or 45 percent, are public transit riders. The most common errand that respondents make, regardless of travel mode, is stopping to shop. A greater percentage of respondents who drive, or do so in combination with transit, need to drop off kids at school/daycare compared to transit riders. Other categories that were commonly listed as errands people make were banking and medical appointments

Figure 9: Q9 If you often make stops to run errands on your way to/from work, what types of errands do you make?



Major Takeaways:

- Most respondents do not need a car once they reach their commute destination.
- Transit riders are less likely to run errands to/from work compared to other modes.

Bus Fare Pricing

Figure 10 shows how much respondents would be willing to pay for a one-way express bus fare. The majority of respondents (52 percent) identified that they are willing to pay between $2.50 and $5 for each trip. This is comparable to the existing fare of the Lynx Transbay bus of $5.[1] Approximately 33

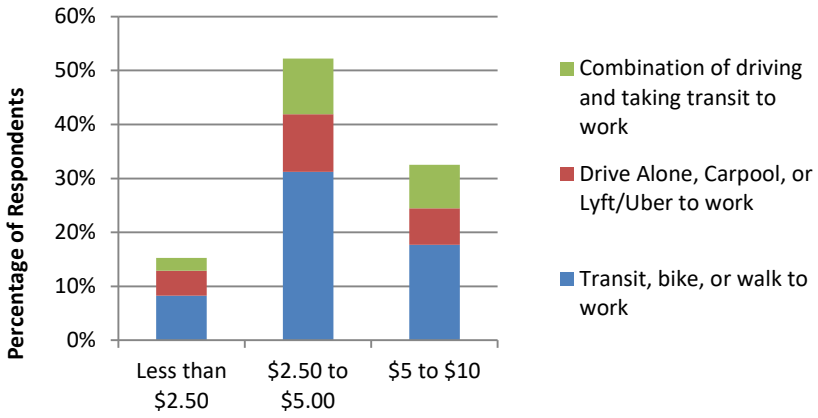
[1] www.westcat.org/fares, accessed January 8, 2019.

percent or respondents are willing to pay between $5 and $10, and 15 percent of respondents said that the bus price would have to be less than $2.50 for them to use it. Existing transit riders would be willing to pay more money for an express bus fare compared to other travel modes.

Major Takeaway:

- 52 percent of respondents say they would be willing to pay between $2.50 to $5.00 for a one-way express bus ticket.

Figure 10: Q10 How inexpensive would a new one-way express bus trip have to be for you to use it?

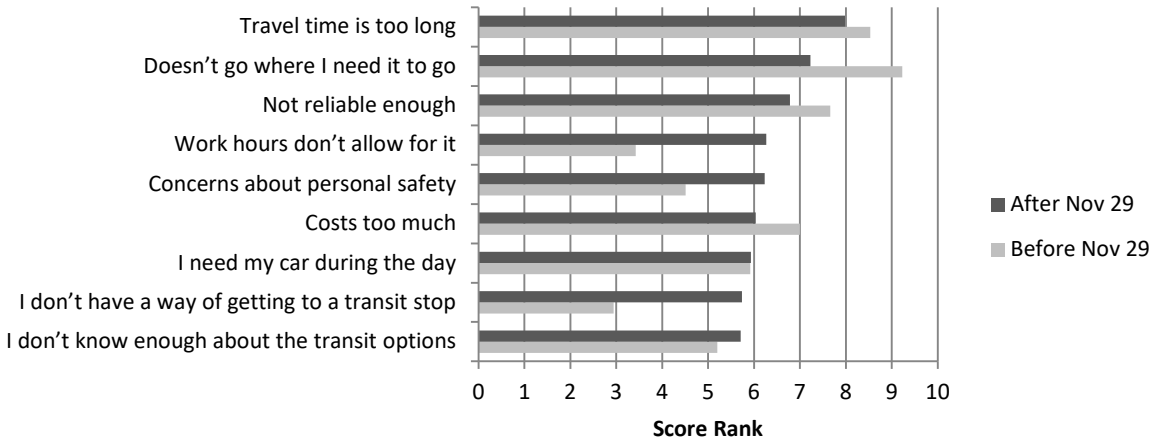


Obstacles to Taking Transit

The final question on the survey asked respondents to rank the reasons why they do not take transit (existing transit riders were directed to skip the question). A total of 187 respondents answered this question, and 278 skipped it. During routine monitoring of the survey results, Kimley-Horn noted that the ranking response results were in the same order as the question. To determine if this affected the accuracy of the results, PlaceWorks randomized the response order on November 29, 2018. Figure 11 shows how results differed before and after the responses were randomized.

The responses before randomization followed the order in which the responses where shown on the questionaire, with "Doesn't go where I need it to go" being first and "I don't have a way of getting to a transit stop" being ranked last. Once the responses were randomized, some of the factors changed significantly, atlthough the top two respones were still highly ranked: the number one reason after randomization was that people didn't take transit due to the travel time taking too long and the second reason was that transit did not go where they needed it to go. The answers "Concerns about personal safety", "Work hours don't allow for it", and "I don't have a way of getting to a transit stop" all ranked significantly higher after the randomization.

Figure 11: Q11 If you don't take transit to commute today, why not?



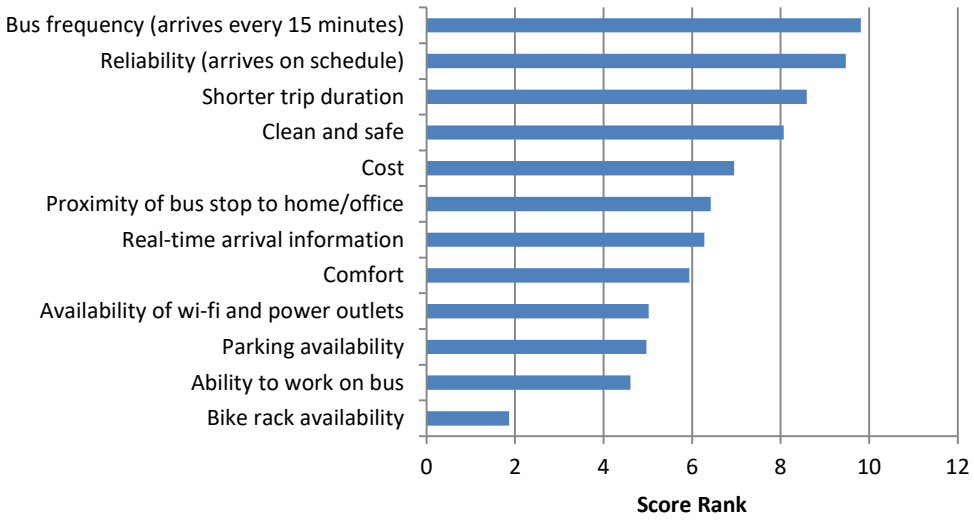
Major Takeaways:

- After randomization, the highest ranked reason why people don't take transit to commute is due to travel time taking too long.
- After randomization, the lowest ranked reason is that they don't know enough about transit options.

RANKING EXERCISE

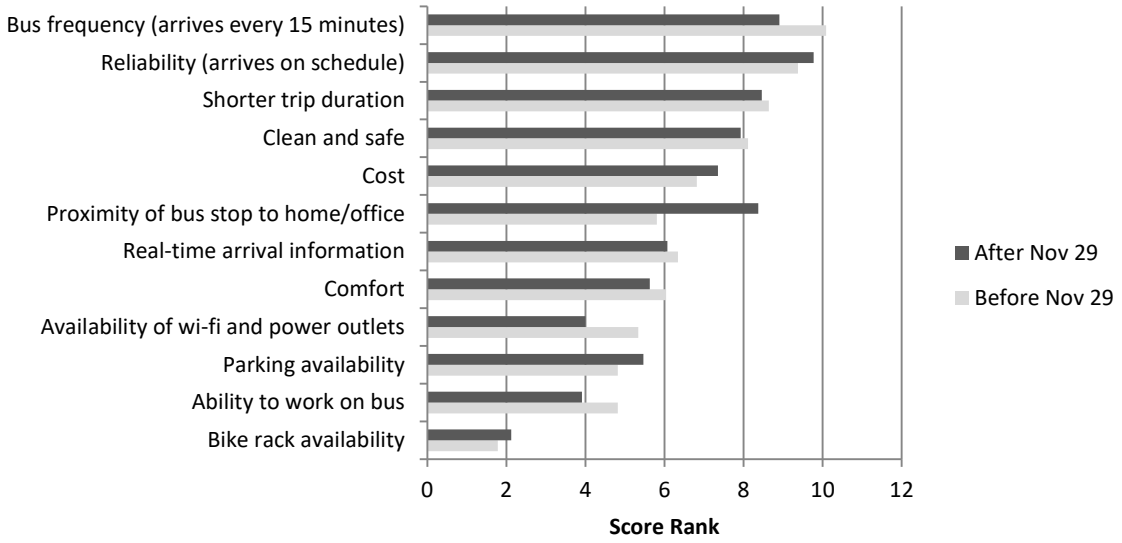
The Ranking Exercise asked respondents to rank the factors that influence whether or not to ride transit. Bus frequency, reliability, and shorter trip duration were the top factors respondents considered when taking transit. Figure 12 shows the outcome of the survey with all responses together. The higher the rank indicates which factor was more important to the survey respondent.

Figure 12: Please rank the factors that you consider when taking public transit in order of importance:



On November 29, 2018, the Ranking Exercise was updated to randomize the order of the factors that people would consider when riding public transit. There were 57 respondents past this date and 181 respondents prior to randomization. Figure 13 shows the results collected before and after PlaceWorks randomized responses. While both bus frequency and reliability ranked high, one of the largest discrepancies is the ranking factor of proximity of bus stop to home/office. More respondents scored this category as important after randomizing than before by more than 2 points. Ability to work on the bus, availability of Wi-Fi and power outlets, and bus frequency had a lower ranking of importance after the results were randomized.

Figure 13: Ranking Results Before and After Randomization on November 29th



Major Takeaways:

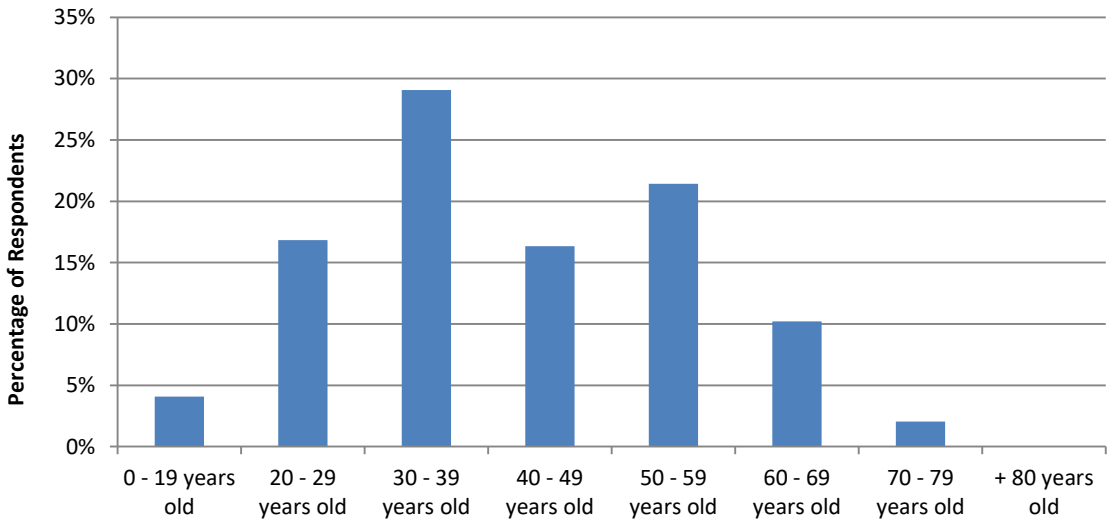
- Proximity of bus stop to home/office was ranked significantly higher after the order of factors was randomized.
- Ability to work on bus, availability of Wi-Fi and power outlets, and bus frequency were ranked lower after randomization.
- Reliability and bus frequency were both highly rated before and after randomization.

DEMOGRAPHICS SURVEY

The project team collected voluntary demographic data from survey respondents to gauge whether the outreach campaign was reaching a wide range of study area population. The Demographics Survey was an optional survey. A total of 196 people responded to this survey.

As shown in Figure 14, the highest cohort of respondents, nearly 30 percent, were between the ages of 30-39 years. Respondents 60 and over represented 12 percent of the total respondents. Since most of the intercept surveys were done at transit centers and stations during commute times, it is not surprising that there were fewer respondents 60 and over. Approximately 84 percent of respondents were between 20 and 59 years old.

Figure 14: Q1 How old are you?



As shown in Figure 15, nearly 40 percent of the survey respondents were from Hercules, which is most likely due to the intercept surveys and one pop-up event being held in this city. A total of 81 percent of respondents lived in West Contra Costa County.

Figure 16 shows the race/ethnicity of respondents who identified as follows: 36 percent white, 25 percent Asian, 12 percent Black or African American, and 11 percent identified as Hispanic or Latino. The remaining 16 percent included people that identified as other races/ethnicities, a combination of races/ethnicities, American Indian and Alaska Native, or Native Hawaiian and other Pacific Islander.

Figure 15: Q2 Where do you live?

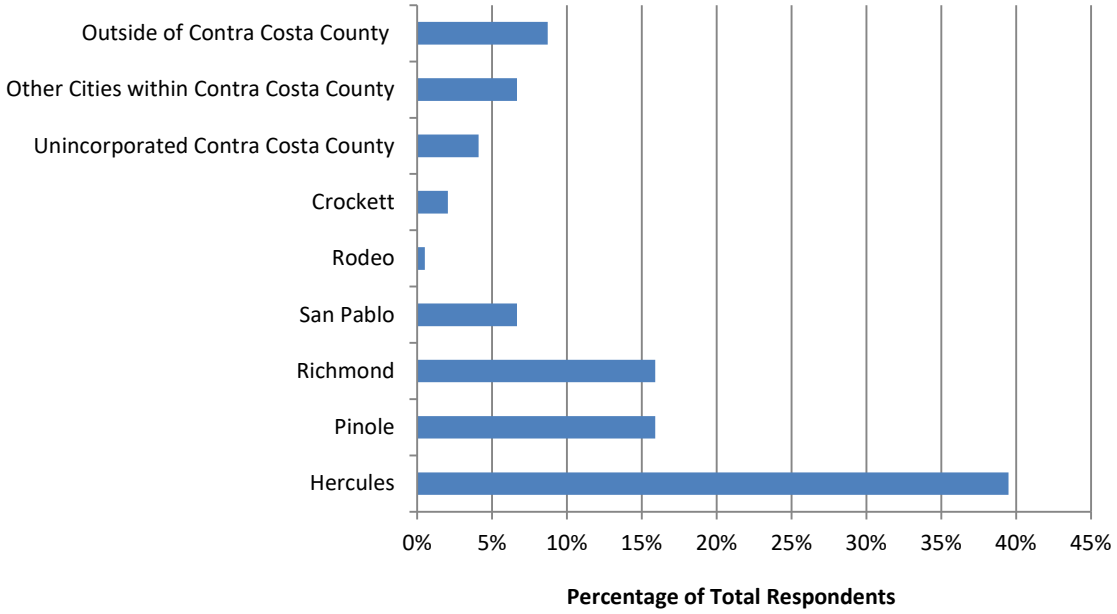
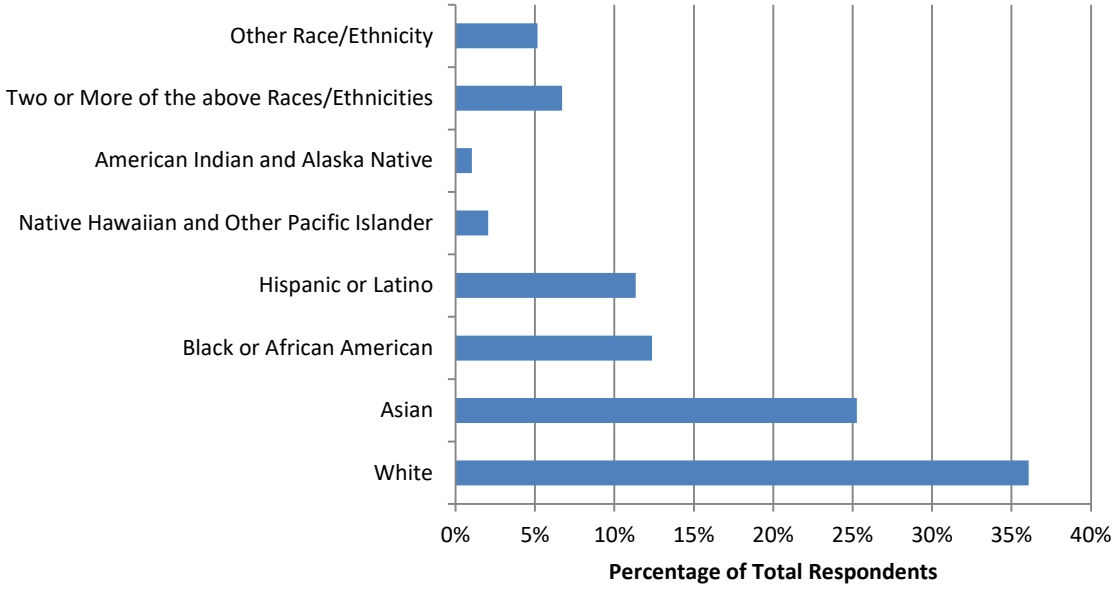
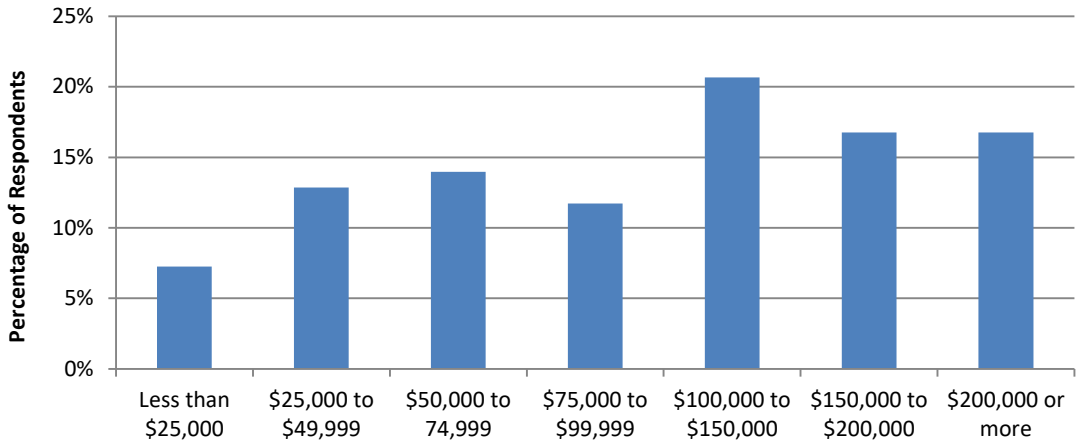


Figure 16: Q3 How would you identify your race/ethnicity?



In Figure 17, the largest cohort of respondents (21 percent) identified a household income of $100,000 to $150,000. The Area Median Income for Contra Costa County is $104,400, as established through the US Department of Housing and Urban Development (HUD).[2] Approximately 20 percent of the respondents have household incomes of $50,000 or less, while 34 percent of respondents have a household income of over $150,000.

Figure 17: Q4 What is your family or household income?



Major Takeaways:

- Approximately 81 percent of the respondents live in West Contra Costa County, with another 11 percent residing elsewhere in Contra Costa County.
- Approximately 64 percent of the respondents identify their race/ethnicity as non-white.
- Approximately 20 percent of respondents have a household income of less than $50,000.

COMMENT FORUM SUMMARY

People had the option of submitting an online comment to share their ideas about the new express bus service. In total, 46 people submitted comments. Appendix C shows each individual comment. General themes from the comments include:

- People believe that this bus service is needed, especially between West Contra Costa and the East Bay.
- A few respondents mentioned that there were enough routes to San Francisco already, such as the LYNX bus, and thought that efforts should be focused exclusively on East Bay destinations.

[2] https://www.huduser.gov/portal/datasets/il.html, accessed January 9, 2019.

- Many people questioned how the new express bus service would connect to other existing transit options, like BART connections at the 19th Street and MacArthur Stations in Oakland, the new Richmond Ferry Terminal, and regional bike paths.
- A few respondents noted that LYNX bus lines during peak commute times are usually overcrowded and suggested having multiple express busses during this time.
- Some people brought up concerns about the traffic on I-80 and, if the bus makes stops frequently, it may create a longer commute than other modes.
- Some identified concerns about the lack of transit connections between East Contra Costa and West Contra Costa.
- Six commenters asked that transit service be expanded on weekends and holidays as well as having some service during non-commute hours.
- Generally, people felt safer on an express bus than on BART.

Next Steps

Outreach for Round 1 concluded on December 21, 2018. Round 2 outreach efforts will be undertaken during March through May 2019. In Round 2, the project team will share and seek feedback on potential express bus route alignments and stop locations. Round 2 outreach will include another two pop-up events, employee focus groups, and online engagement.

Conclusions and Recommendations

CONCLUSION #1: ROUTE TIMING

Most survey respondents need to get to work between 7:00 a.m. and 10:00 a.m. Commuters would be more likely to take public transit with shorter bus headways and if their overall trip duration were reduced. The average travel time of respondents was between 60 to 90 minutes; the new express bus should aim to be within or faster than this timeframe. At the same time, the Plan should consider the transit needs of people who are retired, work on weekends/holidays, or have non-traditional work hours, who could also benefit from express bus service.

CONCLUSION #2: PRICING

A majority of respondents indicated that they would be willing to pay between $2.50 and $5 for a one-way express bus ticket. This is comparable to the existing prices of the LYNX express bus. Approximately 30 percent of respondents said they would be willing to pay between $5 and $10 a ride; and a few people mentioned in the Comment Forum that the express bus would need to compete with BART fares.

CONCLUSION #3: BUS AMENITIES

Although comfort amenities such as bike racks and the ability to work or use Wi-Fi on the bus could be helpful in attracting new riders, these categories generally scored low in the ranking exercises. Ultimately, having a reliable and convenient bus route was the most important factor in transportation choice.

CONCLUSION #4: COMMUTE DESTINATIONS

While more than 50 percent of respondents commute to San Francisco, some of the comments received reflect a desire for an express bus that only stops in East Bay destinations, especially since other express buses and BART already provide service to San Francisco.

Appendix A

List of organizations contacted for press releases or newsletter outreach.

Press Release Recipients

The Advocate
Bay Citizen
Bay City News
Berkeleyside
Contra Costa Herald
Contra Costa Marketplace Magazine
East Bay Times
El Cerrito Patch
E'ville Eye Community News
Pinole-Hercules Patch
Oakland Post News Group
Richmond Confidential*
Richmond Standard
Richmond Pulse
Univision

Newsletter Recipients

City of San Pablo Social Media
City of San Pablo E-Newsletter
City of Pinole City Manager's E-Newsletter
City of Hercules City Manager's E-Newsletter
City of Richmond City Manager's E-Newsletter
Richmond Chamber of Commerce
City of El Cerrito Social Media

Neighborhood Councils

Atchison Village Neighborhood Council
Belding Woods Neighborhood Council
Castro Heights Neighborhood Council
Coronado Neighborhood Council
Crescent Park Apartments Residential Council
Eastshore Neighborhood Council
El Sobrante Municipal Advisory Council
Fairmede Hilltop Neighborhood Council
Greenbriar Neighborhood Council
Hilltop District Neighborhood Council
Iron Triangle Neighborhood Council
Laurel Park Neighborhood Council
Marina Bay Neighborhood Council
May Valley Neighborhood Council
North & East Neighborhood Council
Panhandle Annex Neighborhood Council
Parchester Village Neighborhood Council
Park Plaza Neighborhood Council
Point Richmond Neighborhood Council
Pullman Neighborhood Council
Quail Hill Neighborhood Council
Richmond Annex Neighborhood Council
Richmond Heights Neighborhood Council
Richmore Village/Metro Square Neighborhood Council
Santa Fe Neighborhood Council
Shields-Reid Neighborhood Council
SW Richmond Annex Neighborhood Council

Bold indicates organizations and jurisdictions that published a news article about the project. All have been contacted at least twice.

Appendix B

List of organizations contacted for employer focus groups.

Employer and Location

San Francisco

Cisco Systems Inc.
Dropbox
Gap, Inc.
Mission Bay TMA
Uber
UCSF

Oakland

Alta Bates Summit Medical Center, Summit Campus
BART
City of Oakland
Clorox
County of Alameda*
Kaiser Permanente
Pandora Media
Stanford Health Care
UCSF Benioff Children's Hospital

Emeryville

Emeryville Transportation Management Association
Clif Bar & Co
Grifols Diagnostics Solutions
IKEA
LeapFrog
Oaks Card Club
Novartis*
Peet's Coffee & Tea Inc.
Pixar*
Stanford Health Care
Zephyrus Biosciences

Berkeley

Alta Bates
Bayer Healthcare
City Sports
John Muir Health*
West Berkeley Shuttle
UC Berkeley (Berkeley)

Bold indicates companies that responded to an email and/or phone call. Most have been contacted at least twice.
Asterisk (*) indicates that someone from that company attended the Webinar, hosted on 12/6.

Appendix C: Comment Forum (52 respondents)

We Need an express non-stop bus from transit center to Downtown Oakland with stops along Broadway from 19th St to Jack London Square.

Does "commuter" refer only to riders using the service on weekdays? I'm retired, and I would like good express service on weekends, as well.

It would be nice to have a bus services from Hercules to Oakland (12th St.-City Center) during the rush hours in the morning and the afternoon.

I currently take the Lynx from my neighborhood in Hercules to the Bart transit city in Hercules, then whichever bus leaves the transit center first headed to the Del Norte Bart station, then a Bart train to 12th street city center station downtown Oakland. It is very stressful, takes coordination and trains are crowded and I'm not comfortable with sitting down on some of the seats in the Bart trains. I commuted for over two years to dpwntown SF via the Westcat Lynx...best commuting experience that I have ever had. I arrived to my destination relaxed and enjoyed a comfortable ride to SF. Please, please consider a lynx style bus route from Hercules to downtown Oakland, even if its only a morning and evening route for starters. Thank you very much for your consideration!! Best regards,

I live in El Sobrante and there is no direct service to el cerrito del norte bart or plaza. The #70 which I must walk several blocks to, parts have no sidewalk and must walk in the dark with cars traveling in excess of 80mph during early morning and late night hours, when I walk and catch the bus is dangerous. Please bring express service to El Sobrante direct to Bart Stations excluding Richmond Bart, which coworkers have experienced close muggings and intimidation. Thank you!

I love the idea of an express bus that connects Richmond to SF. I live near San Pablo Ave and Moeser Lane in Richmond Annex. It is VERY VERY difficult trying to take BART to SF. If I drive from my house to the BART station, there's no place to park (all the spaces are already taken). But if I try to take the AC Transit bus from San Pablo Ave to BART, the service is completely unreliable. Sometimes the bus shows up, sometimes it doesn't. If you're going to have a bus, please make sure it shows up when it's supposed to.

Please add a bus stop at Stanton Ave and San Pablo Ave or La Puerta Rd, Richmond, CA and San Pablo Ave towards Berkeley.

We should try this express bus service since the traffic on Hwy 80 is one big nightmare.

Option A: If there is a central stop at the MacArthur bart station for Oakland, that would help to bypass most of the freeway and is a good place for many ppl to do a short Bart transfer to the other Oakland Bart stops (between MacArthur , 19th, 12 St stations). **A stop near 19th Bart station is preferable.** Option B: Another option is to do an Express bus from Hercules to several oakland stops near the current Bart stations. That way there's only several stops for ppl to wait for. I'm not sure how you could connect Jack London square and Chinatown though.

Express service to Oakland, Berkeley, and Emeryville from the Pinole/Hercules area is badly needed. I personally limit my job options as a result of the horrible Bay Area commute.

I think there are enough commuter transits going to San Francisco. I think more commuter Transits need to go to more EastBay downtown areas i.e. Oakland, Berkeley, Emeryville.

Speeding up traffic on hwy 80 won't do much: one has to travel to and from 80 at both the start and end of each journey. Public transit has to (1) connect places we live to places we work and (2) run more often than once every 15 minutes during rush hour. Please, make public transit viable for people who don't want to waste their lives commuting.

Expand Actransit 72R where the service to start early for early bird commuters in Hercules and nearby neighborhood when catching the rapid bus at El Cerrito Del Norte with less stops to get to downtown Oakland in 20 minutes. Bart can be problematic so this viable option would help daily commuters to have another alternative.

I'd like better service within West County; do you know how many buses it takes to go from Downtown Richmond to Pinole Vista or Hilltop Mall? And how much time is involved? Or getting to Walnut Creek without multiple transfers?

I am thrilled to hear that you are studying express buses to the cities listed; it will be a godsend to riders. I would also like to see Westcat coordinate with AC Transit so that riders can get anywhere on San Pablo Avenue with no more than one transfer. Specifically, there should be an AC Transit stop near the corner of San Pablo Ave and Richmond Parkway (there is a Westcat stop near that intersection already). That way, riders could get to important stops in San Pablo (including City Hall and the library) without having to go so far out of their way.

1) I find it appalling that residents of West CCC have no viable way of using public transportation into East CCC. I live in Pinole and work at Los Medanos College and would love to take public transportation. Currently that would mean: taking a bus to El Cerrito Del Norte, taking a train into Oakland(WHY???), transferring to an Antioch bound train, then transferring to another bus to get to the college. It would take me roughly 2.5 -3 hours. 2) If there is not BART line from Richmond to East County (and again, WHY??), then there should be an express bus to a BART station along the Antioch-SF line -- preferably to the North Concord/Martinez line to take advantage of Highway 4 ease. An express bus going on El Camino to Orinda BART would not be an express at this point -- that route is a parking lot after 7am in the morning, and after 4pm in the afternoon. 3) Give CCC residents safe, clean, fast and affordable public transportation to other spots in CCC -- why is the assumption that all CCC residents are working in the East Bay or SF?? Please make this happen! I am having to drive approximately 3 hours/day on days when I have to drive to Lafayette and Oakland to drop off my kids, then drive to work in Pittsburg, then drive back to Oakland, then drive back to Pinole. It's hell. Truly. Make public transportation possible for families like mine!

The title of the post card I received about this issue: Shorten Your Commute! I don't see that happening. I work in Concord and if I take the bus, it will take me twice as long to get to work & back to the transit parking lot than if I drive. That's the main reason I don't take public transportation with the exception of BART. I work approximately 5 miles from the Concord BART, but I have experienced the same problem with the buses at that station: they start/stop too often and don't drop off near my place of work. I don't mind the walk from where the bus drops me, but the timing is unreliable. I don't see this project doing any better than what we already have for public transportation.

We need better BART accessibility: line extensions, in-fill stations, and at least a second bay crossing. Buses are a terrible stop-gap, they just mean more traffic.

Make Amtrak commute train stop in Hercules please!

I use Westcat, Lynx and Bart often and would love to see, Westcat and Lynx offer weekend service. The idea of express service to other east bay citities is brilliant.

Travel to Hohhot, Inner Mongolia, PRC; and look at their Bus Rapid Transit System. The transit system uses the Freeway Median with stations in the middle of the Freeway.

it would be of interest depending on where it stops and how many stops it makes after i get on

I commute near Valley View El Sobrante (De Anza HS), but the AC Transit transbay buses make too many stops in Richmond before getting on 80, slowing down the entire commute. (Also, if I take the 74 local bus to the L or LC I have to catch a very early bus. Therefore, I drive from El Sobrante to Hércules to catch the Lynx!! Why not have the 74 continue to Orinda BART, and or have an Express bus from El Sobrante or Pinole which would immediately get on 80. There are many people in the El Sobrante Pinole área that do not have good options. AC Transit and Westcat are competing too much instead of working together to make it easier for the commuters!! Parking in Hércules Transbay center is extremely dangerous. My car tires were slashed. Most people who I spoke to had their cars broken into. BART should provide cameras. No phone service in case of emergency. Poor cellular connections. We hope you listen to the commuters!!

Bus should stop near Hercules Downtown at bike route. Better way to get/pay for monthly passes.

Used to use express bus from Point Richmond.

Direct service from Point Richmond going to El Cerrito Plaza where I can go shopping and take BART, along 580 and 80 would be a great help to me if I'm to use a bus. Likewise, it would be helpful to have direct service along Garrard to Barrett to go to Kaiser, the Post Office and City Hall.

We need better bus service to Marin from Hercules via Richmond Parkway. With traffic and being indirect it's not ideal to take a bus along congested highway 80 and transfer at el Cerrito del Norte where connections are easily missed.

This is a wonderful idea. My concern is cost and reliability. I take the JPX and sometimes the bus doesn't come or it does really late. If the current lines aren't always reliable, what will happen if and when there are express busses? I also hope the express busses are reasonably priced.

I currently use WestCat to connect with AC Transbay bus at Richmond Transit center in the morning, but in the evening I have to use BART to get home because AC Transbay service in the PM is much less reliable and there is poor coordination between AC Transit and WestCat bus schedules.

This sounds like a great idea! I would take the bus if it ran as frequently as BART and did not cost more. $2.00 each way. Or, I'd pay $3.50 each way if it included free parking. If it costs more than that, I would ride BART.

To avoid traffic on the 80 I leave my house at 5:30am to get to work at 6am. I'll leave work at 2pm or 2:30pm to get home by 3pm. Using BART takes too long to get to work in Emeryville because I need to either drive to BART or take a bus to BART, BART to MacArthur station, and then take the Emeryville-go-round.

WEST should run the express bus services between San Francisco and Hercules at weekends too. I quite often go to SF on Sunday. Bart is always crowded but their stations and cars are filthy quite often I run into some crazy passengers. I have no doubt I am not the only one who feel this way and that once you start bus services, people in Hercules, Berkeley and other cities will be attracted instead of Bart. Weekend services by Lynx is definitely needed for those who want a safe and quiet trip to and from SF Thanks

The West Contra Costa County Express Bus Implementation Plan should also include a 7-day circuitous bus route on strategic points around Hercules starting and ending at the Transit Station so residents will be encouraged to shop and work in Hercules.

I really appreciate bus service for commuting. I commuted to San Francisco for approximately two years with Westcat Lynx and it proved to be the best form of transportation for me. The trans bay buses are comfortable, clean, the drivers skilled and professional and I always felt safe and not stressed out, like when I drove my personal car to work in prior years. I would like to see a similarly model as the Lynx service from Hercules to downtown Oakland. I appreciate this survey and would like more information about this project. My husband commuted to SF for decades and he preferred the bus instead of Bart and so do I. Thank you very much!

I would like to see the carpool lane reserved ONLY for busses on Hwy 80 during commute hours. if that happened, buses could get into SF in 20 minutes instead of 45-90 minutes! Once people hear (and see) that bus travel is SIGNIFICANTLY faster, easier, more pleasant than driving - everybody would take the bus. You'd be able to park tons of cars at Hilltop Mall and other areas and run super frequent busses every 15 minutes full of people. Think big! Try it out for one hour one day and see. The current gridlock on hwy 80 is hurting business in our area, and contributing to the decline of quality of life in the bay area. I encourage you all to think big and make changes happen! lots of love.

As you do these surveys, keep in mind that people in our area may not work in Berkeley, Emeryville and Oakland precisely because there is no rapid bus service to these East Bay job centers. If there was an easy way to commute from here to the east bay I could consider jobs in the east bay, but currently its easier to commute to SF so that is where I work.

There needs to be rapid bus service from the Richmond ferry terminal to and from the Richmond Parkway Transit Center, Hercules transit center, El Cerrito Del Norte Bart and Richmond Bart when ferry starts running in January.

I would love to see Lynx travel from Hercules to Oakland. Blue Shield is moving our headquarters from SF to Oakland (12 street) in Q4/2019 and I would rather take Lynx than drive to BART del Norte station and BART rest of the way to OAK. Many Blue Shield employees live in Hercules and take the Lynx into SF today.

Don’t add these additional cities to existing Lynx line as I don’t want my commute to be even longer than it is today. Create additional bus lines.

With the new Richmond ferry service beginning in January, offer a route from the Hercules transit center there so residents don’t have to drive causing additional traffic.

Understandably, you cannot provide every service needed or desired by everyone, but please don't forget about those of us who are not job commuters. Weekend service to San Francisco and the East Bay would be wonderful. For example, even if the LYNX made one or two stops en route to S.F., it would still be my preferred method to cross the Bay on weekends, where I regularly go for the theater and the opera or to meet friends. Here's another suggestion, run the express buses from Hercules to the El Cerrito del Norte BART station on weekends. That gives people great convenience to access entertainment on both sides of the Bay in a timely, convenient fashion. Anything you can do to both provide alternative transit to driving and make available transit take less time would be welcome. Thank you for asking.
Please implement nextbus (real-time bus arrival times on the web) on all buses so we know when the bus will deviate from the schedule due to traffic and other conditions.
I think this is a good stop gap until we can figure out how to extend the BART line. Ultimately, Contra Costa would benefit from an extension and the residents have been paying the tax for this extension for decades.
Your survey is aimed at working commuters. However, there are many retirees who want safe, reliable options to get to Berkeley, emeryville and Oakland which Bart does not provide. I would ride a bus to shop in those cities but I won't take Bart because there is no parking during the week and it is no longer safe.
Create a strictly bus only lane/route for faster commutes
Please, run LYNX bus on weekends and holidays! A lot of people are working on those days. It is extremely hard to get to SF and back without LYNX bus service from Hercules, CA. Bart ride is too dangerous and unpleasant. At least two LYNX buses in the morning and in the evening on weekends would improve situation tremendously (for example 8:00 am and 9:00 am in the morning, and 7:00 pm plus 8:00 pm in the evening). Also, those people who would like to go to SF for fun on weekends would appreciate late evening bus (coming back from the theatres, from the restaurants).
I live in May Valley Richmond (surrounded by the unincorporated community of El Sobrante). I drive alone to and from the Del Norte BART station to get to work and wish there was a better first-mile, last-mile solution to get to BART. The 74 bus has too many stops and takes a long winded route to get to Richmond Bart. I'd like my area to be serviced by a direct, express line to get to BART, but also downtown San Francisco.
The morning and evening Lynx buses from Hercules/San Francisco need to be either bigger or increase in frequency. People arrive 15-20 mins before the scheduled arrival in the morning and sometimes don't even get a seat. The same thing occurs with the evening commute. Either have high capacity buses or have two buses show up for the popular morning and evening commute hours.
Outreach to Employee Transportation Coordinators on the Oakland/Berkeley/Emeryville end with print/digital/physical materials to distribute to any potential users. Getting the ETC's and empowering them to realize the potential for an improved transit experience would be helpful before launch.
I would not use any other stop except SF. I would not take the bus to casually go to those other cities, I would drive. But having frequent buses from Hercules to SF is good and I would actual like more buses/times between 1:30pm-3:30pm leaving SF back to Hercules

An important factor for my choice in taking express buses is that they can travel in HOV lanes to avoid traffic back up. In AC Transit LA and Westcat Lynx express buses to SF, i notice more and more cars with less that three occupants are in the HOV lanes. Express buses would be even more attractive as a commute option if the police were enforcing correct use of HOV lanes and ticketing the "cheater" cars in those lanes. The "cheater" cars are growing in numbers in the HOV lanes as there is no repercussion, no police pulling people over.

I've taken the AC Transit express bus (LA) from Richmond Transit Center to SF. I switched to Westcat Lynx from Hercules Transit Center as on that route there is more frequency of buses to SF, and from SF all day and during commute home. Also appreciate Westcat lynx bigger travel coach style buses. AC Transit LA has more use of local city buses, that have less comfortable seating and feel unsafe on the highway. I would appreciate having seatbelts on buses. It's very dangerous to travel on highway with no seatbelts. Thanks for opportunity to provide feedback!

PLACEWORKS

MEMORANDUM - DRAFT

DATE September 3, 2019

TO WCCTAC and Kimley-Horn

FROM Charlie Knox and Carey Stone, PlaceWorks

SUBJECT Express Bus Implementation Plan - Community Outreach Round 2 Summary Report

Project Background

This memo provides a summary of Round 2 outreach efforts for the WCCTAC Express Bus Implementation Plan project. Round 2 outreach efforts focused on preferences among potential riders for express bus pick-up and drop-off locations and factors that would influence express bus ridership. Round 2 outreach began in April 2019 and concluded in July 2019.

This memo covers the following topics:

- Spreading the Word
- Public Input Channels
- Analysis of Round 2 Survey Results
- Conclusions and Recommendations

Spreading the Word

To ensure that the community was aware of the planning process, PlaceWorks created and/or updated the following items, as described below:

- Project Webpage and Other Websites
- Social Media Posts
- Round 2 Project Flyer
- Press Releases and News Articles

PROJECT WEBPAGE AND OTHER WEBSITES

PlaceWorks published the Express Bus Implementation Plan project webpage on the WCCTAC website in October 2018. The webpage provides information in both English and Spanish. The webpage includes the project timeline, a way to subscribe to the project mailing list, and online engagement tools, which are further described below. The webpage address is included on both the project flyer and postcard (the postcard was developed in Round 1), and people were encouraged to visit the webpage to find out more information about the project and WCCTAC as an organization. In April 2019, the webpage was updated for Round 2, including links to the Round 2 survey page and references to the home page.

PlaceWorks notified potential riders and interested parties about the webpage by posting on social media, passing out project flyers, and creating press releases, as well as through emails to the project mailing list, partner jurisdictions, neighborhood associations, and East Bay businesses.

In addition to updating the project webpage, the City of Hercules and UC Berkeley Parking and Transportation included information about the project on their websites.

SOCIAL MEDIA

PlaceWorks utilized paid advertising to announce the availability of the online surveys via three promoted Facebook posts. The promoted Facebook posts reached a total of 4,600 West Contra Costa County residents. Members of the project Technical Advisory Committee (TAC) were also asked to share the Facebook post using their social media accounts.

ROUND 2 PROJECT FLYER

PlaceWorks created a flyer, both in English and Spanish, to spread the word about potential express bus stop locations and to encourage people to take the Round 2 survey. The flyer, (Figure 1), was circulated via email, provided at 8.5"x11" in person to more than 40 businesses in Berkeley and Emeryville, handed out at the Richmond Juneteenth Festival, and distributed to Emerytech and Wareham offices in Emeryville. The flyer was also printed at 24"x36" to be easily visible at pop-up events.

Figure 1 Round 2 Flyer

PRESS RELEASES AND NEWS BLURB

Similar to Round 1, PlaceWorks created a press release and short news blurb to notify people about Round 2 outreach efforts and to encourage interested parties to take the online survey. The press release and news blurb were provided to:

- 15 news organizations
- City Manager newsletters at six cities, and one chamber of commerce
- 26 Richmond Neighborhood Councils
- WCCTAC Board, TAC, and interested parties

Appendix A lists each organization that received the press release and news blurb.

The following organizations posted an article about Round 2:

- El Cerrito City Manager's Update and Facebook post
- City of Hercules City Manager's B-Weekly Report
- City of Pinole City Manager's Report
- City of San Pablo E-Newsletter
- City of Richmond City Manager's Weekly Report
- Richmond Chamber of Commerce Newsletter
- Lawrence Berkeley National Laboratory Newsletter
- Front page article in the Richmond Post newspaper (Figure 2)


Richmond Post

New Soul Café Delivers on Southern Flavors

Black Advocates for Progress and Change Meet With Rep. Mark DeSaulnier

West Contra Costa Express Bus Study Identifies Preliminary Routes and Bus Stops

Commuters Asked to Provide Feedback on Potential Express Bus Stop Locations

Neighbors Care About the Fate of Homeowner Leonard Powell – But Not the City or the Court

Point Richmond Music Reveals Lineup for Free Summer Concert Series

Opinion

Figure 2 WCCTAC Richmond Post Article

Public Input Channels

This section describes the various project outreach methods used to generate feedback:

- Online Engagement
- Pop-up Event
- Outreach to Local Businesses
- Employee Focus Groups

ONLINE ENGAGEMENT

For Round 2, PlaceWorks created a second online survey that asked respondents to identify their preferred origin and destination express bus stops among choices established after Round 1 in collaboration with the Technical Advisory Committee. PlaceWorks collected 798 surveys between May 3, 2019 and July 22, 2019. The survey was available in English and Spanish.

In addition to answering the set survey questions, participants also had the option of submitting an open-ended comment. Between February 22, 2019 and July 26, 2019, a total of 56 new comments were submitted, as listed in Appendix B.

POP-UP OUTREACH EVENTS

The purposes of the Round 2 pop-up events were to notify potential riders about the project, answer questions, and direct people to the online survey. Pop-up booth materials included the project postcard, 24"x36" versions of the project flyer, and giveaways such as reusable shopping bags, key chains, and pens donated by WCCTAC and pencils donated by WestCAT.

The two Round 2 pop-up events occurred as follows:

- Richmond Juneteenth Festival (June 15, 2019). PlaceWorks staffed a booth at the Juneteenth Festival held by the City of Richmond, and discussed the project with over 60 people.
- Hercules July 4th Event (July 4, 2019). Council Member and WCCTAC Board Member, Chris Kelley, staffed a booth at the Hercules July 4th Event.

OUTREACH TO LOCAL BUSINESSES

In order to reach local businesses, PlaceWorks reached out to employers by phone, via email, and in person. Appendix C details the list of businesses contacted.

PlaceWorks visited 43 retail stores and businesses in West Berkeley and Emeryville to ask employers about the possibility of holding a focus group and distributing the Round 2 Outreach flyer. Multiple businesses, including Bay Street Mall, offered to distribute the outreach flyer, and REI allowed us to present at a morning huddle.

In addition, PlaceWorks coordinated with Chad Smalley, the Economic Development and Housing Manager for the City of Emeryville, to distribute the survey link to 300 businesses and request employers to host focus groups.

PlaceWorks also worked with Oakland Kaiser Permanente, Lawrence Berkeley National Laboratory (LBNL), and SalesForce to distribute an email with the survey link to their employees. The outreach undertaken by LBNL generated 97 survey responses of the 200 to 300 LBNL employees who live in West Contra Costa County.

EMPLOYEE FOCUS GROUPS

PlaceWorks held a total of three focus group meetings with:

- Novartis (Emeryville)
- Pixar (Emeryville)
- REI (Berkeley)

The purpose of the focus groups was to share information about the project and get feedback on the potential express bus stop locations. A summary of each meeting is below.

Novartis Meeting – May 10, 2019 10:00 AM to 11:00 AM

PlaceWorks and Kimley Horn staff met with six Novartis employees. Charlie Knox from PlaceWorks gave a short presentation and then facilitated a question and answer session. Employees were encouraged to take the survey on their mobile device or submit written comments.

Key takeaways:

- Novartis is moving offices closer to the Amtrak Station and Hollis Street. Accordingly, employees favor the potential express bus stop at 59th Street.

- An employee from Pinole stated that the express bus will need to be faster than driving.
- Participants asked about connections to the Richmond Ferry and Amtrak and agreed to seek interest from fellow employees and neighbors near their homes.

Pixar Meeting – May 10, 2019 12:00 PM to 1:00 PM

PlaceWorks, Kimley Horn, and WCCTAC staff met with eight Pixar employees. Charlie Knox from PlaceWorks gave a short presentation and then facilitated a question and answer session. Employees were encouraged to take the survey on their mobile device or submit written comments.

Key takeaways:

- Some employees consistently work late, sometimes leaving the office at midnight or later, which makes taking a bus difficult if no late service or alternative mode is provided.
- Several participants believe the bus should be less expensive than taking BART. Their perception is that since it isn't Transbay, it should be less than the cost of the WestCAT Lynx route.
- The office has free parking on-site, which makes switching to public transit challenging.
- Participants expressed enthusiasm about the possibility of the express bus being able to use the shoulder to bypass traffic and agreed to seek interest from fellow employees and neighbors near their homes.

REI Meeting – June 14, 2019 8:45 AM to 9:00 AM

PlaceWorks staff met approximately 20 employees during REI's morning staff meeting. Charlie Knox from PlaceWorks gave a short description about the project and then facilitated a question and answer session. Employees were encouraged to take the survey on their mobile device or from home.

Key takeaway:

- Employees expressed general excitement about the express bus service and agreed to seek interest from fellow employees and neighbors near their homes.

Online Comment Forum

In Round 2, respondents could also submit comments online. A total of 56 online comments were submitted between February 22, 2019 and July 26, 2019. A summary of these comments, and their frequency, is as follows:

- General support for the express bus project (13)
- Request for express bus stops at BART stations (10)
  - El Cerrito Del Norte BART (2)
  - El Cerrito Plaza BART (2)
  - MacArthur BART (2)

    - Martinez BART (2)
    - Orinda BART (1)
    - Walnut Creek BART (1)
- Requests for specific routes (18)
    - El Sobrante to UC Berkeley (1)
    - Hercules and Pinole to Downtown Berkeley (1)
    - Hercules to Oakland (5)
    - Hercules to San Francisco Financial District (1)
    - Marin County (1)
    - Oakland to West Berkeley (2)
    - Pinole to Downtown San Francisco (1)
    - Point Richmond to Emeryville and Jack London Square (1)
    - Rodeo to Oakland (1)
    - San Pablo Dam Road to San Francisco and Oakland (1)
    - San Pablo to Berkeley (1)
    - San Pablo to Oakland (2)
- Requests for specific stops (12)
    - El Sobrante (3)
    - Kaiser Oakland (3)
    - Kensington neighborhood (1)
    - LaMorinda/Walnut Creek area (1)
    - Pinole Valley Road at I-80 (1)
    - Regatta at Marina Bay Parkway (1)
    - San Francisco Airport (1)
    - San Pablo Avenue and Victoria Crescent (1)
- General comments (5)
    - Bike racks on buses (1)
    - Bus only lanes (1)
    - Disabled access (2)
    - NextBus real-time arrival app (1)

Analysis of Round 2 Survey Results

The purpose of the Round 2 survey was to seek input on preferred express bus pick-up and drop-off locations and to understand the factors that would influence express bus ridership.

PlaceWorks collected 798 surveys between May 3, 2019 and July 22, 2019. PlaceWorks performed two sets of analysis: (1) data from all survey respondents, and (2) only responses from West Contra Costa County (i.e., residents from San Pablo, Richmond, Pinole, Hercules, and unincorporated communities). West Contra Costa Commuters comprised 65 percent of all respondents. Since the majority of survey

respondents are from West Contra Costa County, the results did not change substantially between the two datasets and typically varied by only a few percentage points (1 to 5 percent). Accordingly, the following analysis only presents responses from the entire dataset.

The graphs below generally report the percent of the total responses and the total number of respondents by category shown as X % (X).

COMMUTE ORIGIN AND DESTINATION (QUESTIONS 1 AND 2)

Questions 1 and 2 asked where respondents live and the location of their place of employment/school. Figure 3 below illustrates the majority of respondents live in West Contra Costa County cities, primarily Richmond, Hercules, El Sobrante, Pinole, and El Cerrito. Respondents also live in communities in central and eastern Contra Costa County, as well as various Alameda County cities, San Francisco, and Napa, Solano, and Marin Counties, which are represented under the "Other" category.

Figure 3 Question 1: Place of Residence (772 Respondents)

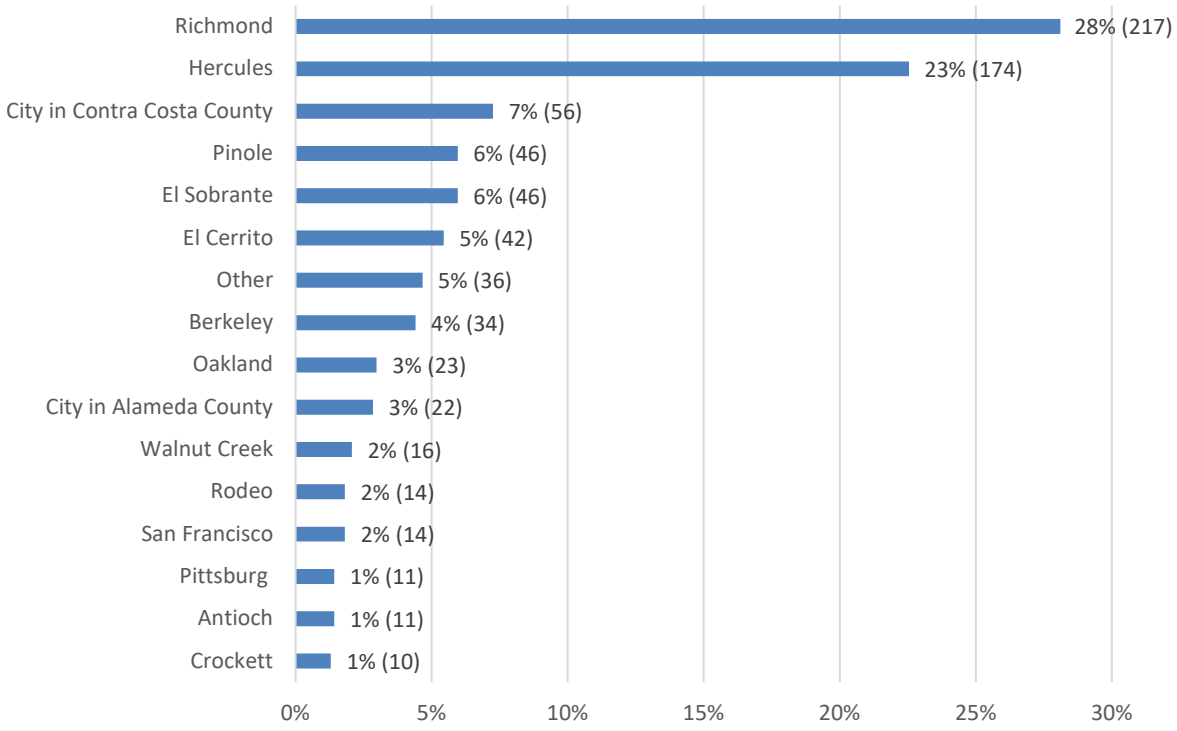
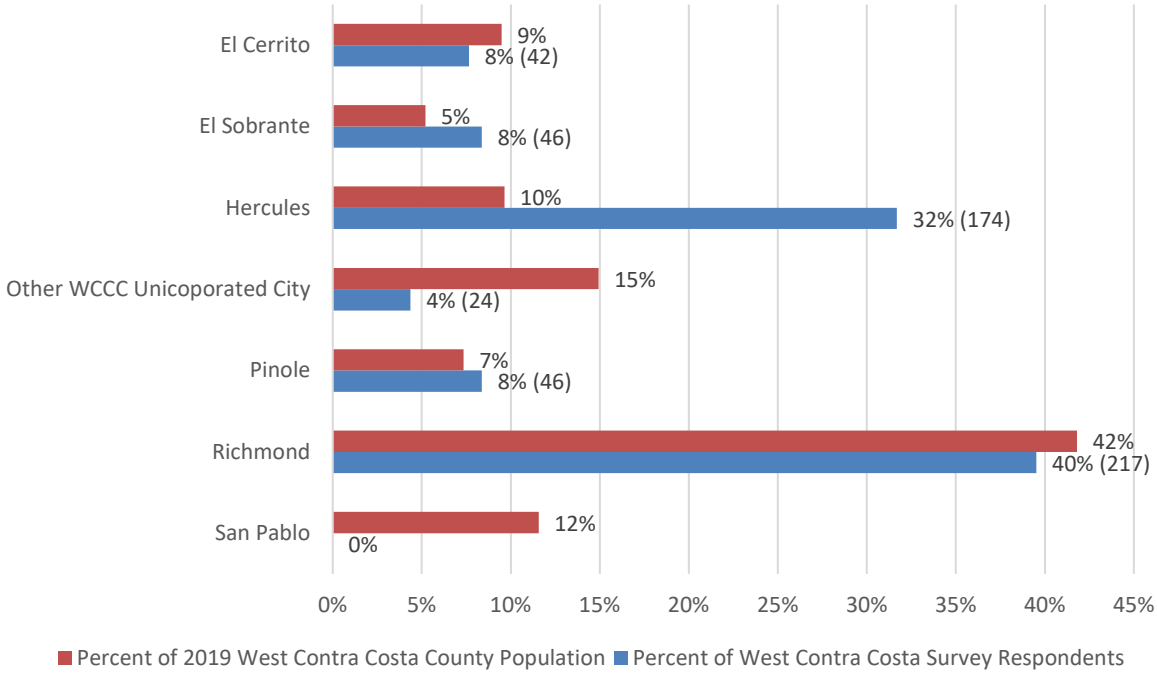


Figure 4 reports the proportion of West Contra Costa County survey respondents compared to the 2019 West Contra Costa County population. The Round 2 survey was generally successful in securing survey responses in similar proportion to the 2019 West Contra Costa County population distribution for El Cerrito, Pinole, and Richmond. However, the Round 2 survey received more responses from residents of Hercules (32 percent) compared to the proportion of the 2019 Hercules population in West Contra Costa County (10 percent), in part due to complementary outreach by the City of Hercules. There were no survey respondents from San Pablo whose residents comprised 12 percent of the 2019 West Contra Costa County population.

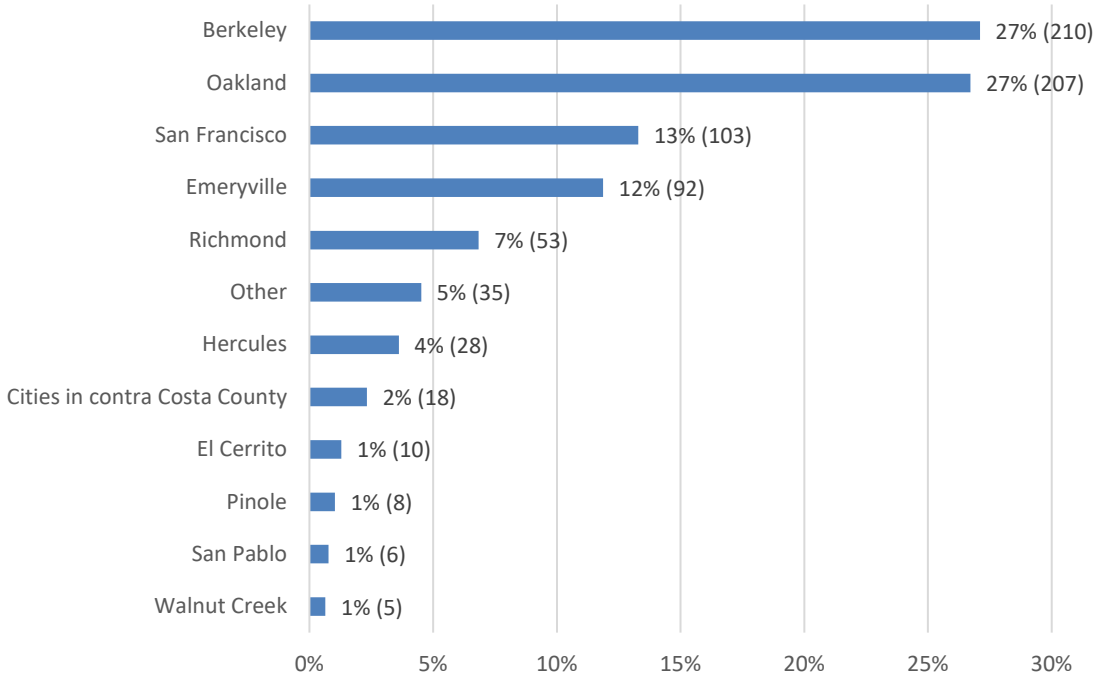
Figure 4 Proportion of West Contra County Respondents Compared to 2019 West Contra Costa County Population



Source: Data source for 2019 West Contra Costa County population is the California Department of Finance.

Figure 5 illustrates the majority of respondents (79 percent) work in Berkeley, Oakland, San Francisco, and Emeryville.

Figure 5 Question 2: Place of Employment (775 Respondents)



COMMUTE ARRIVAL AND DEPARTURE TIMES (QUESTIONS 3 AND 4)

Questions 3 and 4 asked what time respondents arrive and leave work or school. Figure 6 shows that the largest cohort of respondents (46 percent) arrive to work or school between 8:00 AM and 9:00 AM, with roughly 34 percent arriving between 6:00 AM and 8:00 AM and 13 percent arriving between 9:00 AM and 10:00 AM.

Figure 6 Question 3: Commute Arrival Time (770 Respondents)

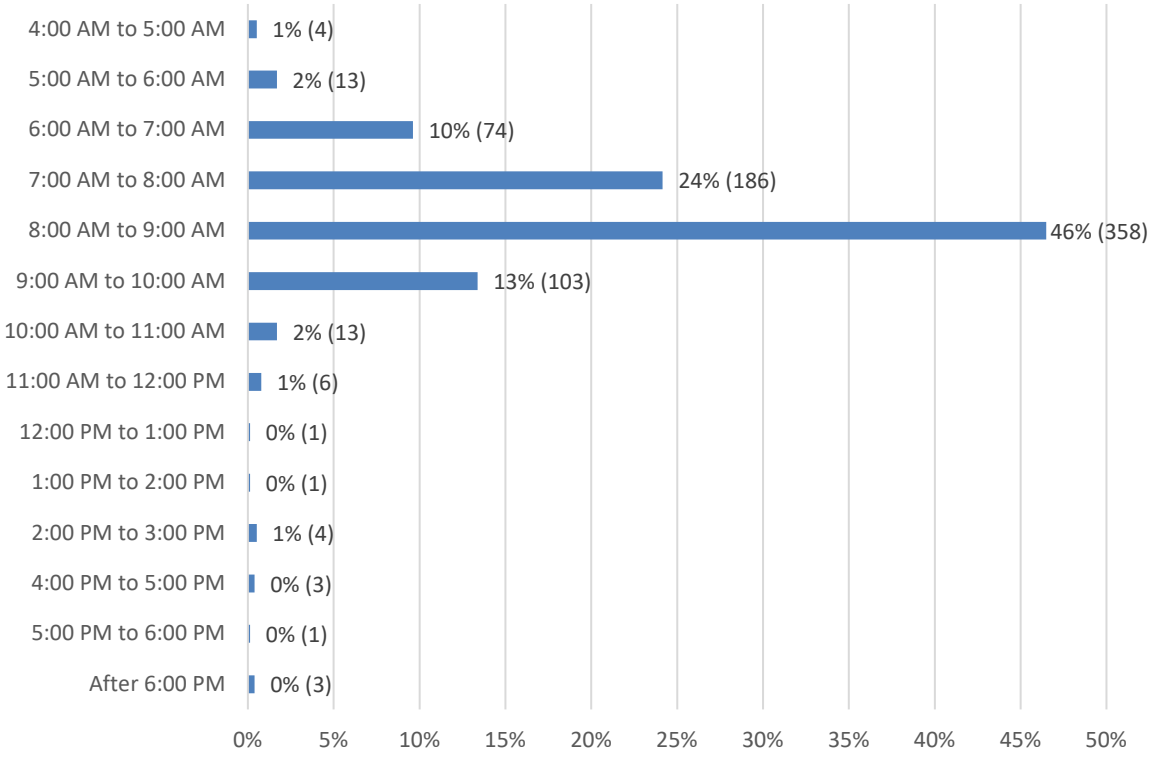
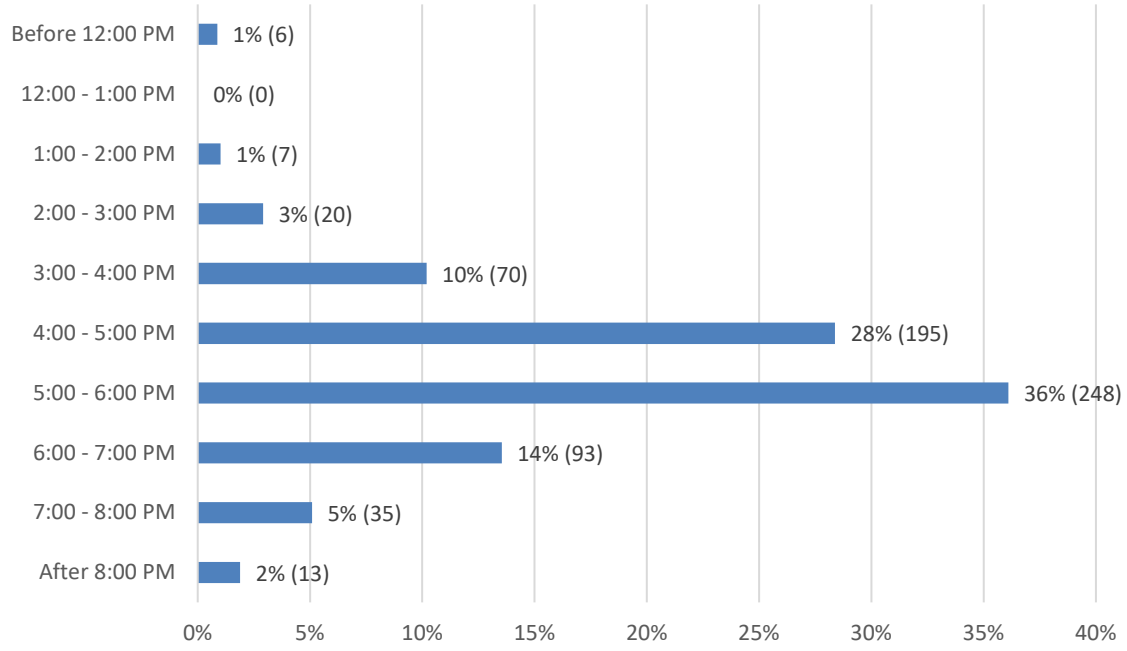


Figure 7 shows that the largest cohort of respondents (36 percent) depart work or school between 5:00 PM and 6:00 PM, with roughly 38 percent departing between 3:00 PM and 5:00 PM and 14 percent departing between 6:00 PM and 7:00 PM.

Figure 7 Question 4: Commute Departure Time (687 Respondents)



COMMUTE MODE (QUESTION 5)

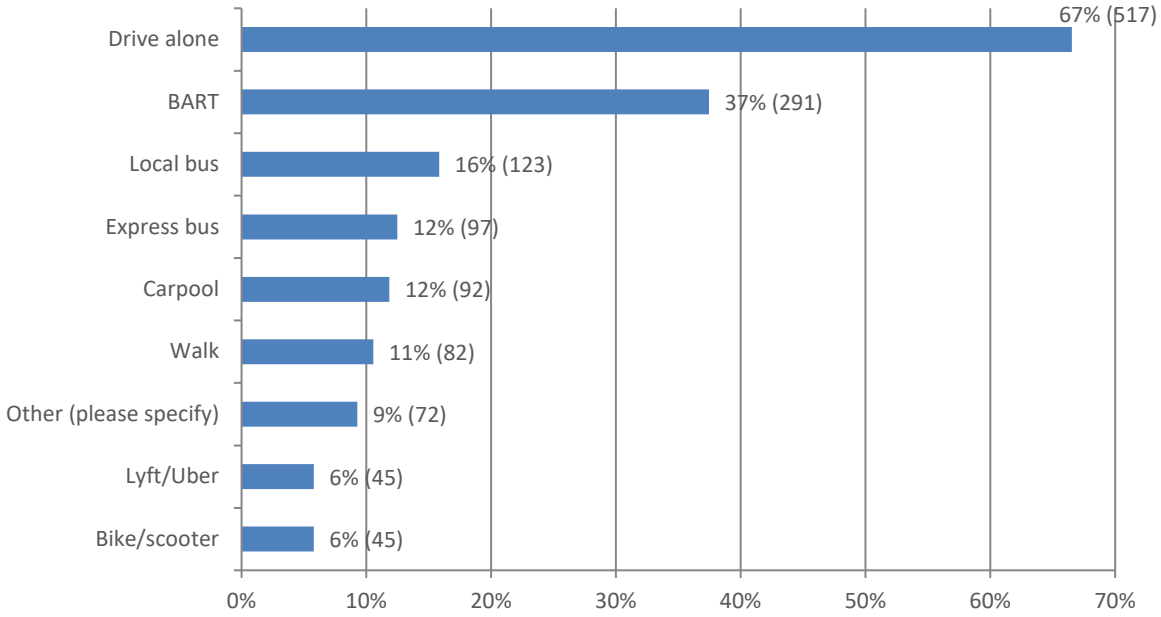
Question 5 asked respondents to report their primary mode(s) of transportation to work or school. Respondents had the option of choosing all commute mode choices that applied including:

- Drive alone
- BART
- Local bus
- Express bus
- Carpool
- Walk
- Other
- Lyft/Uber
- Bike/scooter

A total of 777 respondents answered this question, the results represented on Figure 8. Approximately 44 percent of respondents reported driving alone and another 23 percent reported driving alone in combination with some other mode of transportation.

Of the 37 percent of respondents who commute by BART, a little less than half also reported they drive for a portion of their commute. Approximately 16 percent of respondents indicated they commute using a local bus, with 12 percent using an existing express bus. Furthermore, 12 percent commute by carpool, 11 percent commute by walking, 6 percent by bike or scooter, 6 percent by Lyft or Uber, and 9 percent indicated "Other."[1] Respondents who chose "Other" identified commute modes such as riding the ferry, employer- provided shuttles, university- provided shuttles, WestCAT Lynx bus routes, paratransit, and Amtrak.

Figure 8 Question 5: Commute Mode (777 Respondents)



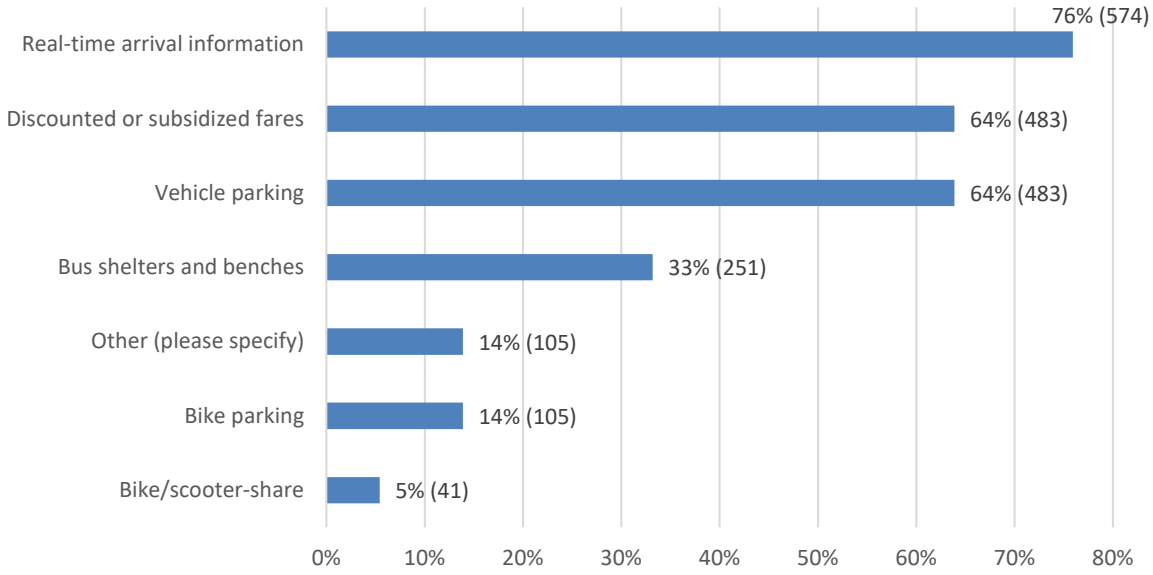
Note: Because respondents could check any commute mode options that applied, the number of responses summarized after the percentage totals 1,364.

[1] Since this was a "check all that apply" question, the total number of responses for each category was divided by the total number of respondents who answered Question 5 (i.e., 777 respondents) to come up with the percent of total. Given this methodology, the percentages do not add up to 100%.

EXPRESS BUS AMENITIES (QUESTION 6)

Question 6 asked respondents what amenities would influence their decision to ride an express bus. Respondents could choose one or more options from a list of seven amenities. As shown on Figure 9, respondents favored real-time arrival information (76 percent), discounted or subsidized fares (64 percent), and vehicle parking (64 percent).[2]

Figure 9 Question 6: Preferred Express Bus Amenities (756 Respondents)



Note: Because respondents could check all preferred express bus amenities that applied, the number of responses summarized after the percentage totals 2,042.

Approximately 14 percent of respondents chose the "other" option and noted the following factors that would influence them to ride the express bus:

- Frequency of bus trips
- Coffee vendors on-site
- Connections to BART stations
- Space for bike racks on the express bus
- Reliable arrival times
- Free parking
- Safe parking
- Security at express bus stops

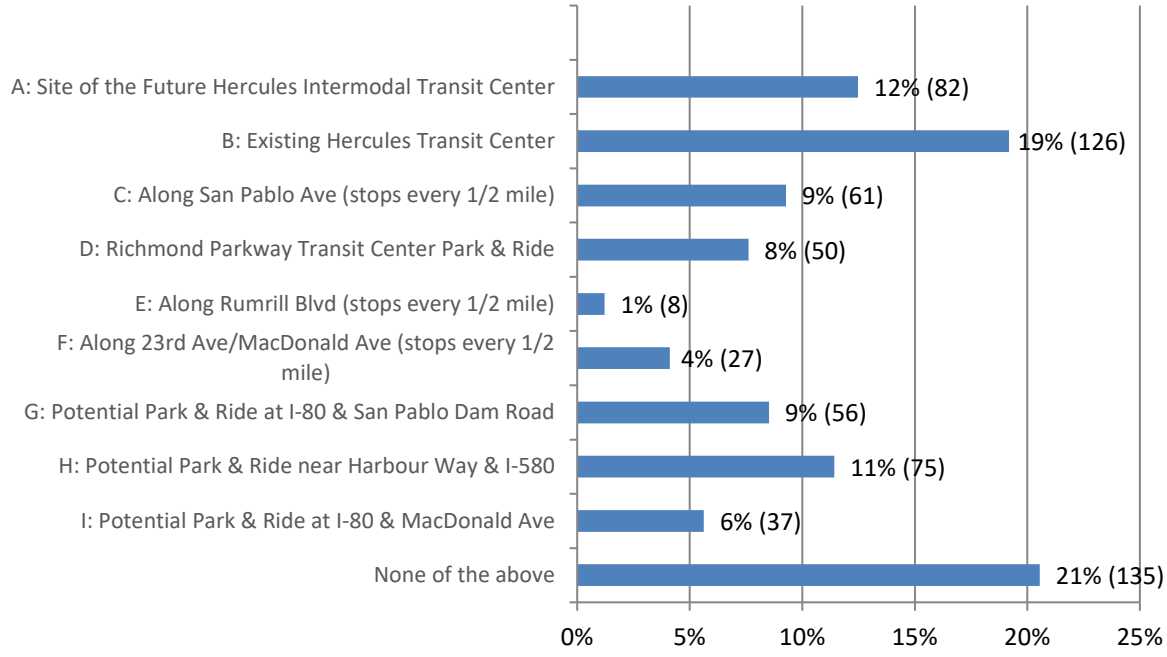
[2] Since this was a "check all that apply" question, the total number of responses for each category are divided by the total number of respondents who answered Question 6(i.e., 756 respondents) to come up with the percent of total. Given this methodology, the percentages do not add up to 100%.

- Limited number of stops
- Connection to Lynx
- Uber subsidy
- Disabled-persons accessibility
- WiFi

EXPRESS BUS ORIGIN STOPS (QUESTIONS 7 AND 8)

A total of 657 respondents identified their preferred express bus pick-up location. Of the provided options, the Existing Hercules Transit Center, Future Hercules Intermodal Transit Center, and Potential Park & Ride near Harbour Way and I-580 were the top three choices at 19 percent, 12 percent, and 11 percent of the total responses, respectively (Figure 10). In addition, 65 percent of the respondents chose an express bus origin stop that provided parking, which appears to confirm that the availability of parking is a key consideration for potential riders. Approximately 21 percent (135 respondents) of the respondents indicated that none of the express bus stop origins would work for them. Of the 135 respondents who chose "none of the above," 60 percent (80 respondents) reported living in cities south of Richmond, which indicates that they would have to back-commute to board at an express bus origin stop. Respondents also suggested alternate bus origin stops, which are described below.

Figure 10 Question 7: Preferred Express Bus Origin Stop (657 Respondents)



Respondents had the option of suggesting other bus stop origin locations in Question 8. Of the 350 responses, 252 responses listed locations in West Contra Costa County (organized east-to-west):

- Crockett (8 of 350 total responses). Most respondents stated any location in Crockett would work.
- Rodeo (11 of 350 total responses). Most respondents requested the Willow Avenue Park and Ride be considered as a potential origin stop.
- Hercules (63 of 350 total responses). Common locations included:
- Along Refugio Valley Road
- At San Pablo Avenue and Hercules Avenue
- At San Pablo Avenue and Sycamore Avenue
- Victoria by the Bay, particularly along Victoria Crescent Way
- Pinole (24 of 350 total responses). Common locations included:
- At Appian Way and San Pablo Avenue
- At Appian Way and Tara Hills Drive
- Along Pinole Valley Road near I-80
- El Sobrante (13 of 350 total responses). Most respondents requested stops along San Pablo Dam Road.
- Richmond (88 of 350 total responses). Common locations included:
- Along Carlson Avenue
- Hilltop Mall
- Marina Bay (primarily at Regatta Boulevard and Marina Bay Parkway)
- Point Richmond
- Along San Pablo Avenue
- San Pablo (12 of 350 total responses). Common locations included:
- Along San Pablo Avenue
- I-80 at El Portal Drive
- El Cerrito (32 of 350 total responses). Common locations included:
- El Cerrito Del Norte BART Station
- El Cerrito Plaza BART Station
- Arlington Avenue at Barrett Avenue
- Moeser Lane at San Pablo Avenue
- Kensington (1 of 350 total responses). The respondent requested a stop along Arlington Avenue at Oberlin Avenue.

PlaceWorks analyzed the suggested stops from residents of Richmond and Hercules, the two cities with the most respondents. When looking at the 112 suggested stops from Richmond residents, top responses included:

- 4 suggestions for Hilltop Mall
- 4 suggestions for along Carlson Avenue
- 6 suggestions for the two El Cerrito BART stations

- 23 suggestions for along San Pablo Avenue
- 27 suggestions for Marina Bay (primarily at Regatta Boulevard and Marina Bay Parkway)

When looking at the 72 suggestions from Hercules residents to Question 8, top responses included:

- 5 suggestions for Refugio Valley Road
- 6 suggestions for San Pablo Avenue and Sycamore Avenue
- 7 suggestions for the existing Hercules Transit Center
- 10 suggestions for San Pablo Avenue and Hercules Avenue
- 16 suggestions for Victoria by the Bay

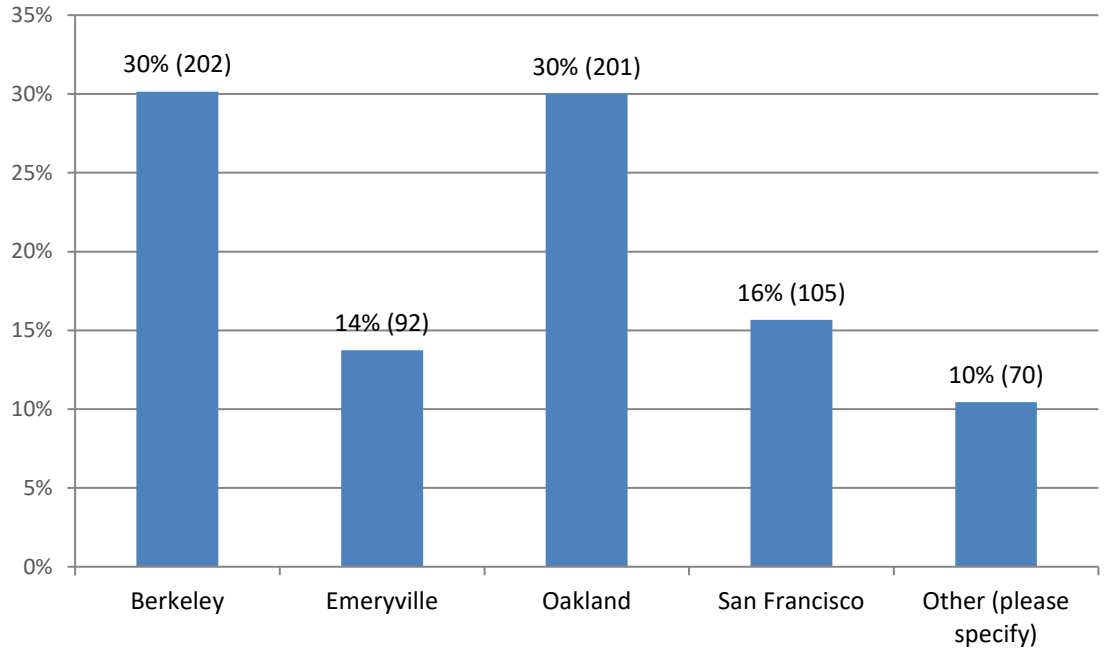
Respondents also suggested origin stops in the following cities:

- Albany
- Antioch
- Berkeley
- Brentwood
- Castro Valley
- Concord
- Emeryville
- Martinez
- Moraga
- Oakland
- Orinda
- Pittsburg
- Pleasant Hill
- San Francisco
- San Ramon
- Vallejo
- Walnut Creek

EXPRESS BUS DESTINATION STOPS (QUESTIONS 9 – 13)

Question 9 asked respondents to identify the destination of their daily commute (Figure 11). Of the 670 respondents who answered this question, the top two destinations were Berkeley and Oakland at 30 percent each. PlaceWorks worked with Oakland Kaiser Medical Center, UC Berkeley Parking and Transportation Department, and LBNL to distribute the survey link to employees and students, which could have affected the frequency of responses for Berkeley and Oakland.

Figure 11 Question 9: Express Bus City Destination (670 Respondents)



Approximately 10 percent of the respondents identified a commute destination other than Berkeley, Emeryville, Oakland, or San Francisco:

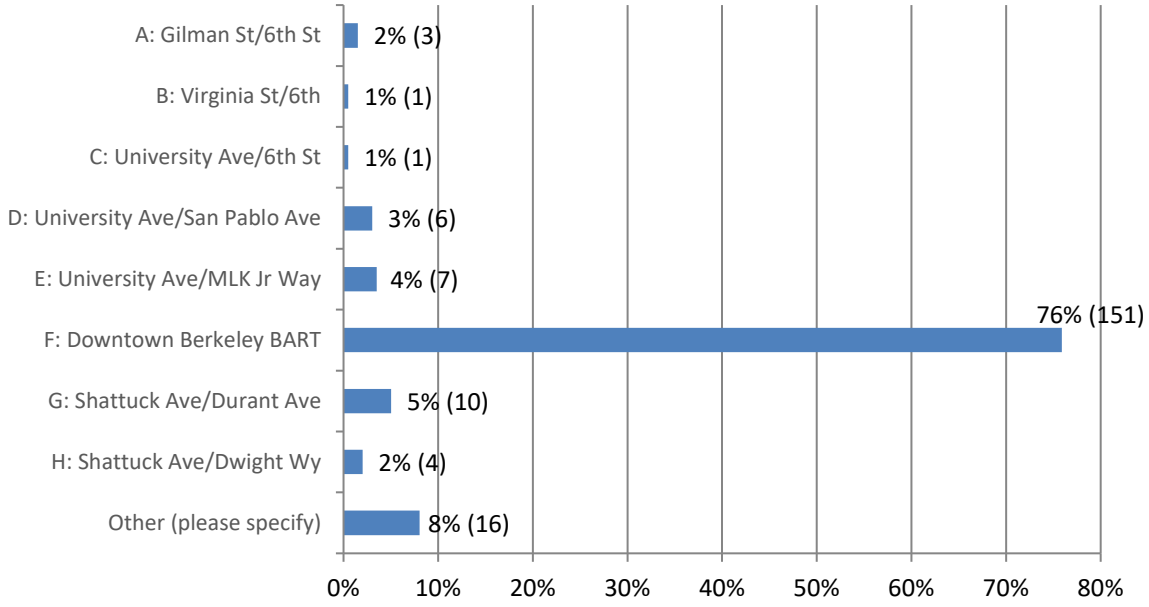
- Alameda (2)
- Albany (1)
- Concord (1)
- Corte Madera (1)
- El Cerrito (8)
- Fairfield (1)
- Foster City (1)
- Hercules (2)
- Marin (1)
- Martinez (1)
- Menlo Park (1)
- Mill Valley (1)
- Novato (1)
- Piedmont (1)
- Pinole (3)
- Pittsburgh (1)
- Pleasanton (2)
- Richmond (17)

- Rodeo (1)
- San Jose (2)
- San Pablo (2)
- San Pablo
- San Rafael (3)
- San Ramon (1)
- South San Francisco (1)
- Walnut Creek (1)

Berkeley

If respondents chose Berkeley as their commute destination, they were forwarded to Question 10, which presented a list of potential Berkeley express bus stop locations. Of the 199 respondents who identified Berkeley as their commute destination, 76 percent chose the Downtown Berkeley BART station as their preferred express bus destination stop (Figure 12). Again, the popularity of the Downtown Berkeley BART stop may have been influenced by outreach undertaken by UC Berkeley and LBNL to employees and students. Of the eight percent of respondents who chose "Other," common suggested destination stops included UC Berkeley and along Ashby Avenue (five respondents suggested Ashby at 6th Avenue, 7th Avenue, or San Pablo Avenue, and one respondent suggested Ashby Avenue at Telegraph Avenue).

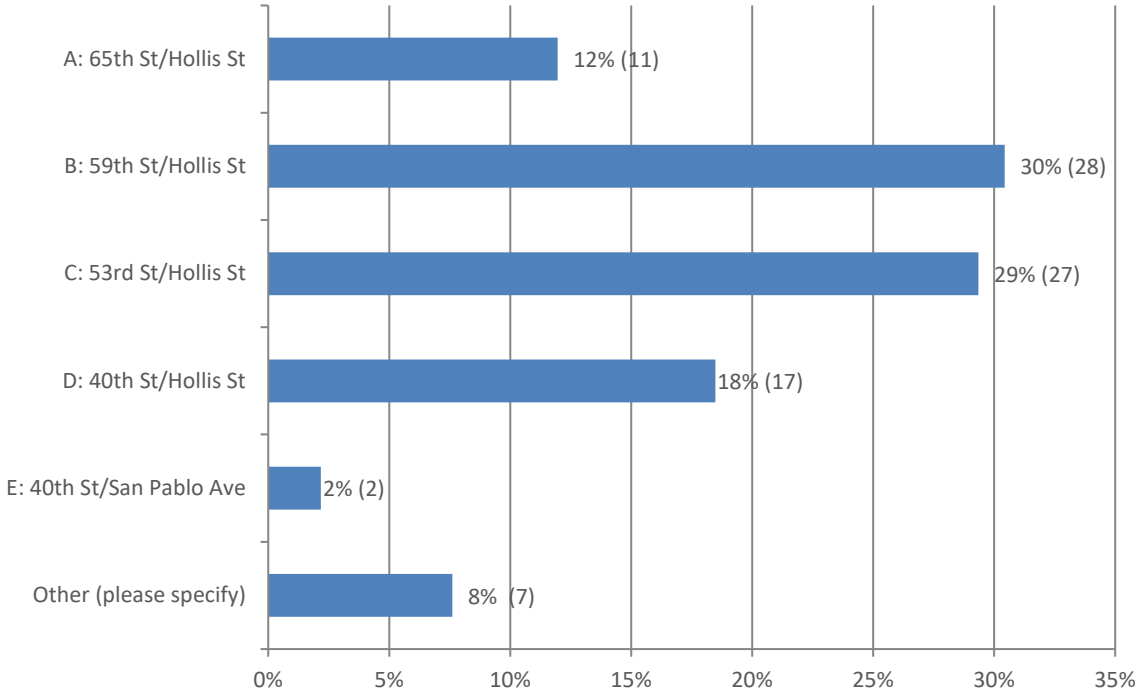
Figure 12 Question 10: Berkeley Express Bus Stop Location Responses (199 Respondents)



Emeryville

If respondents chose Emeryville as their commute destination, they were forwarded to Question 11, which presented a list of potential Emeryville express bus stop locations. Of the 92 respondents who identified Emeryville as their commute destination, the majority chose express bus stops along Hollis Street (Figure 13). Respondents who chose "Other" suggested adding a stop near The Towers and/or Powell Street at I-80 or along Hollis Street at 45th Street or 64th Street.

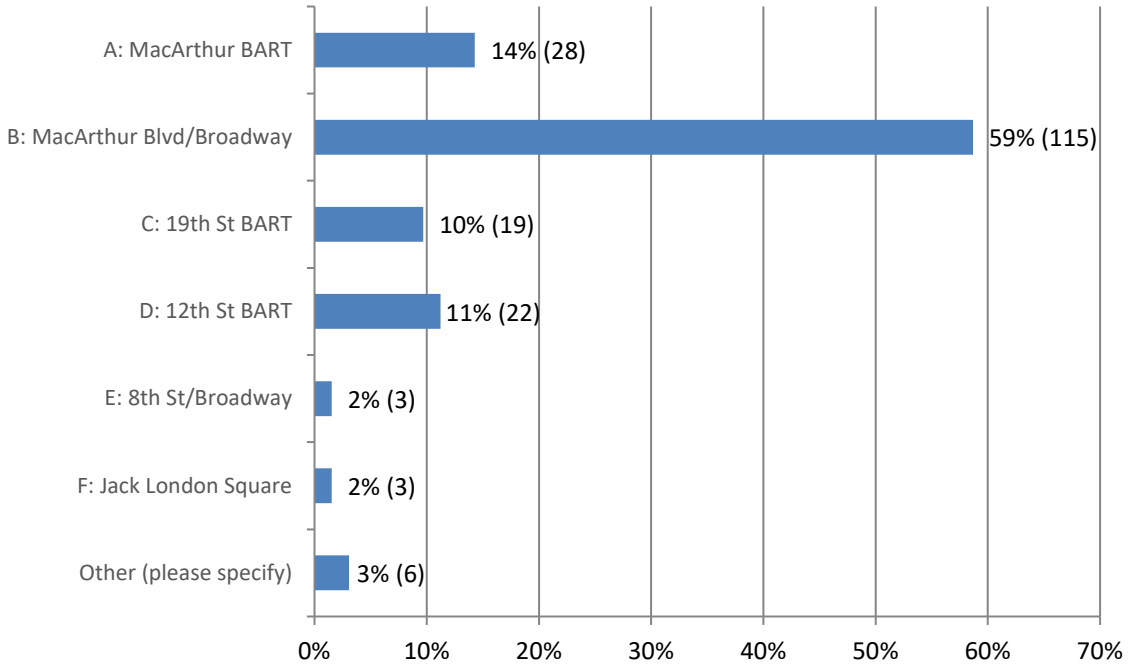
Figure 13 Question 11: Emeryville Express Bus Stop Location Responses (92 Respondents)



Oakland

If respondents chose Oakland as their commute destination, they were forwarded to Question 12, which presented a list of potential Oakland express bus stop locations. Of the 196 respondents who chose Oakland as their commute destination, the majority (59 percent) chose MacArthur Boulevard/Broadway as the preferred express bus stop location (Figure 14). Again, the popularity of this location is likely related to outreach undertaken by Kaiser Oakland which is located at the intersection of MacArthur Boulevard and Broadway. Of the six respondents who chose "Other," four identified stops close to Oakland Kaiser. Other suggested stops included the Oakland Coliseum/San Leandro BART, and MacArthur Boulevard at Sheffield Avenue.

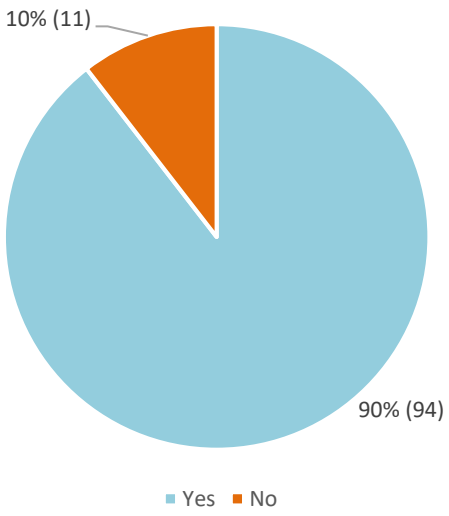
Figure 14 Question 12: Oakland Express Bus Stop Location Responses (196 Respondents)



San Francisco

If respondents chose San Francisco as their commute destination, they were forwarded to Question 13, which asked if an express bus stop at the Transbay Terminal would work for their commute. As shown in Figure 15, 90 percent of respondents (of 105 total responses) indicated the Transbay Terminal would be a feasible express bus stop. Respondents who said "no," indicated the Transbay Terminal is too far from the Civic Center, Mission District, and other parts of the city and that transit connections to these areas would take too long from the Transbay Terminal.

Figure 15 Question 13: Would the Transbay Terminal Express Bus Stop Work for You? (105 Respondents)



RESPONDENT DEMOGRAPHICS (QUESTIONS 14 – 16)

The Round 2 Survey also collected voluntary demographic data from survey respondents to gauge whether the outreach campaign was reaching a wide range of demographics.

Question 14 asked survey respondents to identify their age group which was answered by a total of 636 respondents. As shown in Figure 16, the age of survey respondents covered a range of age groups. The highest cohort of respondents, approximately 28 percent, were between the ages of 30-39 years. Respondents age 60 and over account for 11 percent of the total responses, which is likely related to the survey targeting working adults. More than 85 percent of respondents were between 20 and 59 years old.

Figure 16 Question 14: Age of Survey Respondents (636 Respondents)

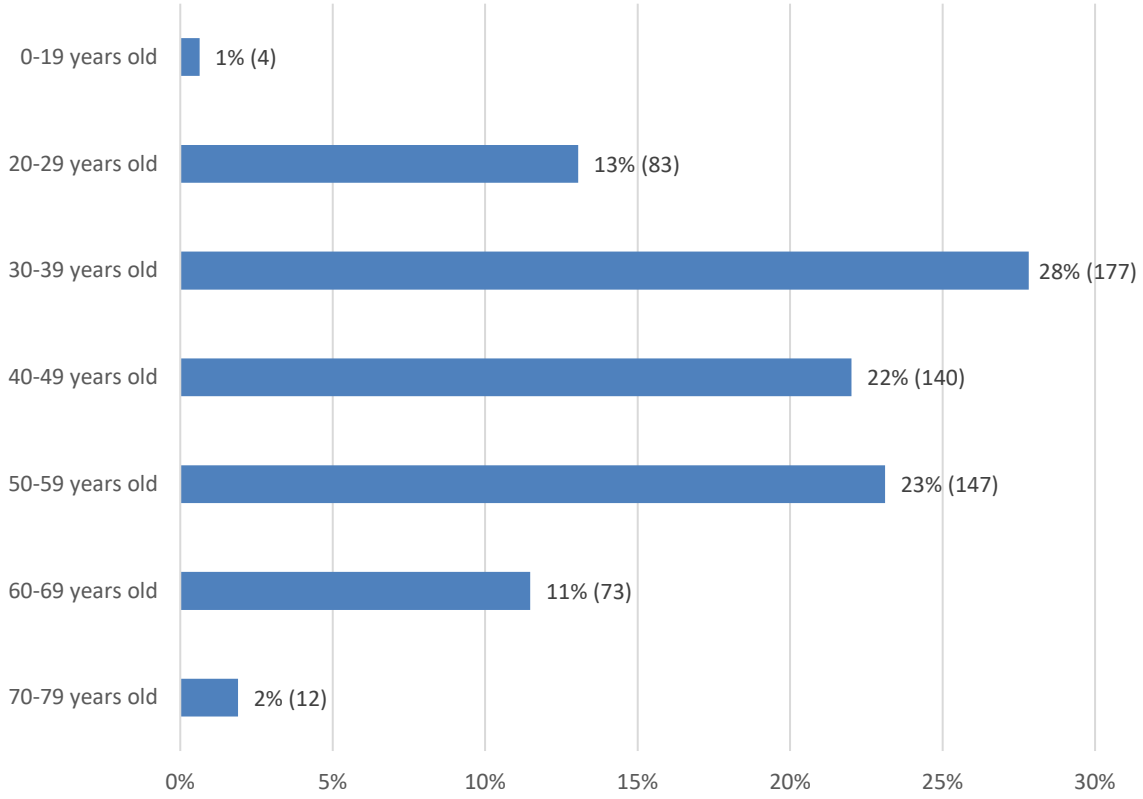
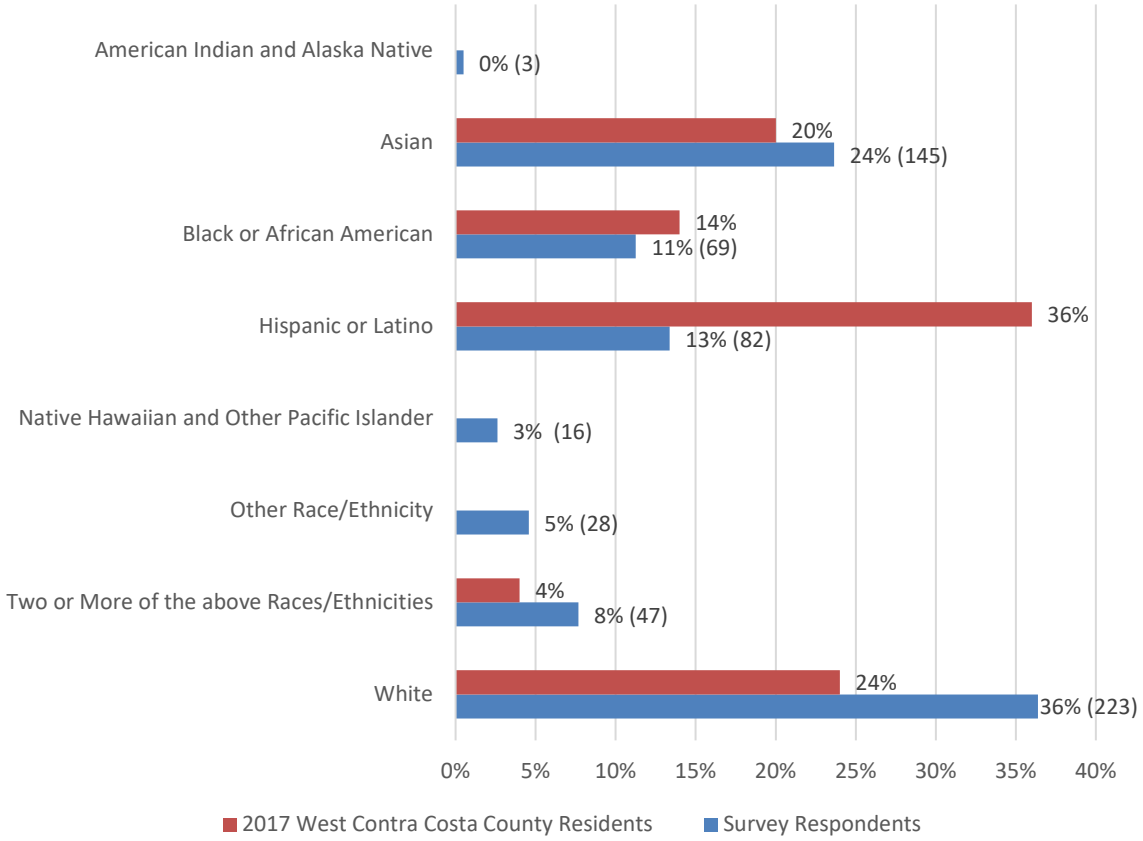


Figure 17 shows the race/ethnicity of the 613 respondents who identified their race, in comparison to the 2017 race/ethnicity breakdown of West Contra Costa County as reported by the American Community Survey.[3] The reported race/ethnicity of survey respondents as follows: 36 percent White, 24 percent Asian, 11 percent Black or African American, and 13 percent Hispanic or Latino. The remaining 16 percent included people that identified as other races/ethnicities, a combination of races/ethnicities, American Indian and Alaska Native, or Native Hawaiian and other Pacific Islander.

Figure 17 Question 15: Race/Ethnicity of Survey Respondents Compared to 2017 West Contra Costa County Population (613 Respondents)

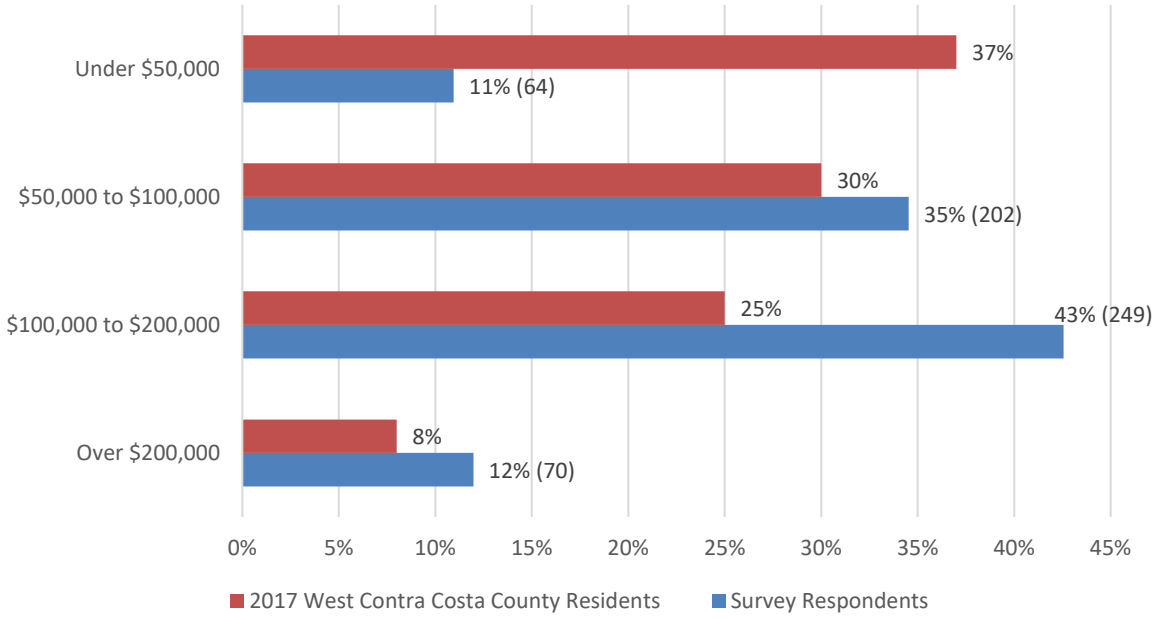


Source: Data source for West Contra Costa County demographics is the 2017 American Community Survey.

[3] https://censusreporter.org/profiles/06000US0601393620-west-contra-costa-ccd-contra-costa-county-ca/, accessed on August 27, 2019.

As shown in Figure 18, the largest cohort of respondents (43 percent of the 585 respondents who reported their income) identified a household income of $100,000 to $200,000. The Area Median Income for Contra Costa County is $104,400, as established through the US Department of Housing and Urban Development (HUD) and the 2019 federal poverty line for a family of four is $25,750.[4]

Figure 18 Question 16: Household Income of Survey Respondents (585 Respondents)



Source: Data source for West Contra Costa County demographics is the 2017 American Community Survey.

Conclusions

Express Bus Routes

Although the survey did not directly ask about express bus routes, participants generally commented that there should be limited express bus stops along the routes, the express bus service should be faster than driving alone, and there should be connections to and from BART.

Express Bus Origin Stops

Overall, survey respondents preferred express bus origin stops that provide parking. Of the origin stop options provided, 32 percent of survey respondents preferred stops in Hercules. Richmond was also a

[4] https://www.huduser.gov/portal/datasets/il.html, accessed January 9, 2019.

popular origin stop location with 31 percent of respondents favoring stops in Richmond (with 88 respondents suggesting alternate origin stops in Richmond, particularly in Marina Bay).

Express Bus Destination Stops

Stops in Downtown Berkeley, at MacArthur and Broadway in Oakland, along Hollis Street in Emeryville, and the San Francisco Transbay Terminal were the most frequently chosen destinations. Outreach efforts by Kaiser Permanente, UC Berkeley, and LBNL may have boosted results for Berkeley and Oakland destinations.

Destination stops near employment areas that provide all-day parking could prove challenging to entice drivers to switch to express bus service.

Express Bus Amenities

Real-time arrival information, vehicle parking, and subsidized fares scored highest in potentially attracting express bus riders, though bike racks and bus shelters could also be helpful in promoting ridership.

Appendix A

List of organizations contacted for press releases or newsletter outreach.

Press Release Recipients
The Advocate
Bay Citizen
Bay City News
Berkeleyside
Contra Costa Herald
Contra Costa Marketplace Magazine
East Bay Times
El Cerrito Patch
E'ville Eye Community News
Pinole-Hercules Patch
Richmond Post News Group
Richmond Confidential
Richmond Standard
Richmond Pulse
Univision

Newsletter Recipients
City of San Pablo Social Media
City of Pinole City Manager's E-Newsletter
City of Hercules City Manager's E-Newsletter
City of Richmond City Manager's E-Newsletter
Richmond Chamber of Commerce
City of El Cerrito City Manager's E-Newsletter

Richmond Neighborhood Councils
Atchison Village Neighborhood Council
Belding Woods Neighborhood Council
Castro Heights Neighborhood Council
Coronado Neighborhood Council
Crescent Park Apartments Res. Council
Eastshore Neighborhood Council
El Sobrante Municipal Advisory Council
Fairmede Hilltop Neighborhood Council
Greenbriar Neighborhood Council
Hilltop District Neighborhood Council
Iron Triangle Neighborhood Council
Laurel Park Neighborhood Council
Marina Bay Neighborhood Council
May Valley Neighborhood Council
North & East Neighborhood Council
Panhandle Annex Neighborhood Council
Parchester Village Neighborhood Council
Park Plaza Neighborhood Council
Point Richmond Neighborhood Council
Pullman Neighborhood Council
Quail Hill Neighborhood Council
Richmond Annex Neighborhood Council
Richmond Heights Neighborhood Council
Richmore Village/Metro Square Neighborhood Council
Santa Fe Neighborhood Council
Shields-Reid Neighborhood Council
SW Richmond Annex Neighborhood Council

Note: **Bold** indicates organizations and jurisdictions that published a news article about the project and the article was confirmed. All have been contacted at least once.

Appendix B

Appendix B includes the 56 public comments submitted between February 22, 2019 and July 26, 2019.

Eliminating lanes of traffic on an already congested major thruway along with elimination of street parking will make the congestion and parking so much worse.
what about the people coming from Highway 4 Brentwood, Antioch, Pittsburg way
Idea should be expanded to include Martinez, Bay Point, Pittsburgh, and Antioch.
WE NEED IT ASAP
I think this is an option worth exploring especially when there are problems with BART.
An express bus to Oak Med Center would be fabulous. I live in Kensington and could use the service along Arlington Ave, Colusa, or San Pablo streets. Thank you for asking!
I don't live or work in West Contra Costa, but it would be great if an express bus connected the Kaiser Pinole medical office building, the Kaiser Richmond medical center, and the Kaiser Oakland medical center, as many Kaiser employees travel between those locations routinely. Thank you!
Having a stop in Marina Bay in Richmond at Regatta and Marina Bay Pkwy would be walkable for a lot of people living in the bedroom community. No parking needed.
How about an express bus from Del Norte BART to down town Pinole maybe stopping near Sprouts (for East Pinole) and then to Hercules?
Please have express bus from Marina Lakes Drive to SFO international airport
I love the Lynx from Hercules to SF. Would love to see it expanded to Berkeley, Emeryville, Oakland and even Walnut Creek. I am retired and not a fan of driving to these places, although I do so. I'm sure there are many who would find this a life changing convenience.
Would love to have a bus that goes to Emeryville. My office is just there and there are a lot of other businesses and hotels in the area that would greatly benefit with this, expansion. There can be a stop just after exiting Powell St where the hotel is or at 1900 powell where the emerygoround usually drops off people. Commute time from Hercules to Emeryville takes me 45mins to an hour on commute times as i dont have use the carpool. If this express bus will happen, i would definitely take it instead of driving.
I would like WCC to explore the possibility of routes to Marin County.
Need a route to Oakland, preferably MacArthur bart station or Kaiser.
As the transportation manager for UC Berkeley, I feel that many of our employees, students, and staff can take advantage of an easy transit option from the hilltop, Pinole. And Hercules areas to the immediate Berkeley area. While I understand that the primary option is in West Berkeley, there could be an advantage to connect with our folks here. Please contact Dave Sorrell (d.sorrell@Berkeley.edu) if you guys feel that UCB can be a potential partner (we are interested in outreach opportunities). Thanks!
The idea is very good to extend your express experience for the area around El Sobrante. However, it would really help to put a stop of two on San Pablo Dam road with access to Orinda BART, as was the case for many years, and to San Francisco. If you want cars to get off the road, replace them with viable stops on San Pablo Dam Road. There are over 40,000 cars a day that run up and down San Pablo Dam Road. You could alleviate a lot of the traffic with a express bus line to San Francisco, which would reduce the San Pablo Dam Road traffic load. San Pablo Dam Road is a main Highway

from 580, and Orinda, to 80 and access to San Francisco. If you had a bus line going down San Pablo Dam Road to San Francisco, or a bus running up and down San Pablo Dam Road to Orinda BART, a lot of congestion could be alleviated. Thank you.

El Cerrito Plaza to The Towers Emeryville would be truly fantastic!

Would love to see a stop near Pinole Valley Road and the Dwight D. Eisenhower freeway crossing! It would be fairly easy to exit the free-way, pick up at Sprouts or Kaiser and get right back on the freeway.

Greetings, There are no stops indicated on the map for El Sobrante. San Pablo Dam Road is heavily traveled and to have no stops in this town is counter intuitive. By having stops in El Sobrante, a heavily populated residential town, you can save people from traveling on Hwy 80 to either go to a Bart station or to travel to Oakland/San Francisco. Additionally, many drivers come from other areas but travel down San Pablo Dam Road to get to Interstate 80. Am surprised not to see a stop on San Pablo Dam Road in El Sobrante. San Pablo Avenue has numerous AC Transit buses already servicing the area.

An express bus service and bus only lanes are majorly welcomed improvements to transit service between west Contra Costa and Oakland/Berkeley/Emeryville. As a resident of West Oakland I look forward to the reduction in air pollution and asthma caused by car emissions. - Blake

Hwy 80 is very congested and traffic incidents can delay buses. Consider express service to BART in El Cerrito. We really need to extend BART to Hercules

Your survey is basically only for people commuting to work. Retired folks would also benefit from alternative modes of transportation. I would go to Oakland more frequently if there was an express bus from Hercules. The same is true of going to Berkeley. I travel to SF only by Lynx. Would love to see some Lynx service on the weekends.

I am retired, so I don't need the service to get to a job. Instead, I use it to reach entertainment venues in San Francisco several times a year, and that can be during the work week as well as on weekends. I realize I am not your target customer for express bus service, but I would love to have service to San Francisco, Berkeley, Oakland, and Emeryville on weekends. Maybe, soon, you'll be able to offer that, too.

Hello and Greetings, Express buses are urgently needed in El Sobrante. In order for me to get to Del Norte (El Cerrito) Bart station, I must take the #74, then take the 72R, then finally arrive at Bart. In other words, it takes me about one hour and 30 minutes to get from my house in El Sobrante (on San Pablo Dam Road and Clark Street) to Del Norte Bart. It is unclear where the proposed stop will be in El Sobrante. The map is very general and vague. I wanted to let you know there needs to be at least one stop on San pablo Dam Road, before the Casino, preferably on Clark, or May Road or even Castro Ranch as there are many commuters in these areas that need to go to Bart or San Francisco. Can you please provide a more clearer location of where the proposed bus stop will be in El Sobrante? Thanks again.

It would be wonderful if there was express bus service between Pinole and downtown S.F. It takes much too long to take Westcat to BART and then BART to S.F.

Please implement NextBus (real-time bus arrivals). If a bus is late it would be helpful to know ahead of time. Many of us have 2 hour commutes in the morning because the bus is late.

A bus to downtown berkeley would be so wonderful!!!

I would like to take an Express Bus from Point Richmond on Canal & West Cutting Blvd to Emeryville and Jack London Square. Alternatively, from the WETA Richmond Ferry Terminal to Emeryville and Downtown Oakland.
Why is this the question? Why are you ONLY concerned about connecting West Contra Costa County to points further West? For those of us who live in the Pinole/Hercules area, and work in Contra Costa County, we need viable commute options from Hercules to the BART station in Martinez. We shouldn't have to take bus to El Cerrito or Richmond, take BART to MacArthur in Oakland, THEN get a Contra Costa bound BART train. It makes the commute two hours long by public transportation, when a simple solution would be for an express bus to go from Hercules to the Martinez BART, so we could get to where we need to go in Contra Costa more directly.
I work in Albany but live in San Pablo along Tara Hills, is there any way there can be express buses to this area? Right now the JL/JR stops along San Pablo to El Cerrito Del Norte, but that would take longer to make the change to a 72 to get to Albany
Because BART does not come close to Emeryville train station, it is hard to get there. A great express bus route would be from El Cerrito Plaza BART, to Emeryville train station. That would pick up the traffic along over-crowded San Pablo Rd., the parallel artery that is clogged because I-80 is so jammed.
Our office from SF is relocating to Oakland this summer. An express bus from Hercules to Oakland would benefit a lot of employees like me who will be facing the struggles of everyday traffic of "bus then transferring to Bart" commute. Most especially it will benefit our family if we can leave and back to our house at the perfect time.
I think it is a very good idea that WCCTAC is exploring the idea of starting express bus service from West Contra Costa to East Bay cities of Emeryville, Berkeley and Oakland. Currently, there is no direct bus or BART service to east bay and there is so much traffic on I-80 and so many accidents it is hard to predict how long it would take to drive 15 to 20 miles. Also, parking has become very expensive. Better late than never. Thank to WCCTAC.
I AM INTERESTED IN A WCC Express Bus to Oakland and West Berkeley. What about a later LYNX bus for when SF Giants game are playing. Thank you Rodney rcalindas@yahoo.com
Hi Everyone, This comment is about connecting Hercules to Martinez. I commute by bicycle to/from these 2 cities during the week when the weather allows. Is it possible to create a bike lane or trail parallel to Hwy 4 from Cumming Skyway to Sycamore Ave at Claey's Ranch? It'll save bike commuters about 4 miles of hills. Thank you
Would be great to have from Hercules, Pinole, San Pablo area to decrease congestion on Highway 80 To Oakland!
A bus directly to downtown Oakland - 11th & Broadway would be GREAT!!!
Instead of expanding ACT bus service, you should be IMPROVING existing services for seniors! There should be an alternative to the existing noisy/bumpy/disturbing vans with sometimes-disturbed-individuals, so that senior citizens can get to and from their doctor appointments safely with a minimum of stress. The current situation is woefully lacking and needs upgrading. Bring back the sedan rides for elderly instead of these disruptive van-buses!
So much needed especially for the disabled or people who don't have a vehicle, cannot drive or are afraid to drive themselves. Thank you.

Appendix C

List of organizations contacted for employer focus groups.

Oakland

Kaiser Permanente

Jack London Improvement District

Emeryville

Novartis*

Pixar*

Wareham Development, Emerystation Campus

Emerytech Office

Emeryville Chamber of Commerce (300 employers)

Bay Street and Powel Street Plaza

- Ikea[1]
- Trader Joe's[1]
- Apple[1]
- Starbuck at Powell Street Plaza[1]
- Starbucks at Hollis Street and 65th Street[1]
- H&M[1]
- Gap[1]
- Los Moles[1]
- Uniqlo[1]
- Old Navy[1]
- Ross[1]
- Banana Republic[1]
- American Eagle[1]
- Barns and Noble[1]
- Bay Street Management Office[1]

John Muir Health

Berkeley Bowl West[1]

Berkeley IronWorks[1]

Gilman Area Businesses

- Dollar Tree[1]
- REI*[1]
- Chipotle
- Walgreens[1]
- La Calle 10[1]
- Philz[1]
- Berkeley Burgers[1]
- Whole Foods[1]
- North Face Outlet[1]
- City of Berkeley Transfer Station and Recycling Center[1]
- Picante[1]
- Gilman Brewery[1]
- Fieldworks Brewery[1]

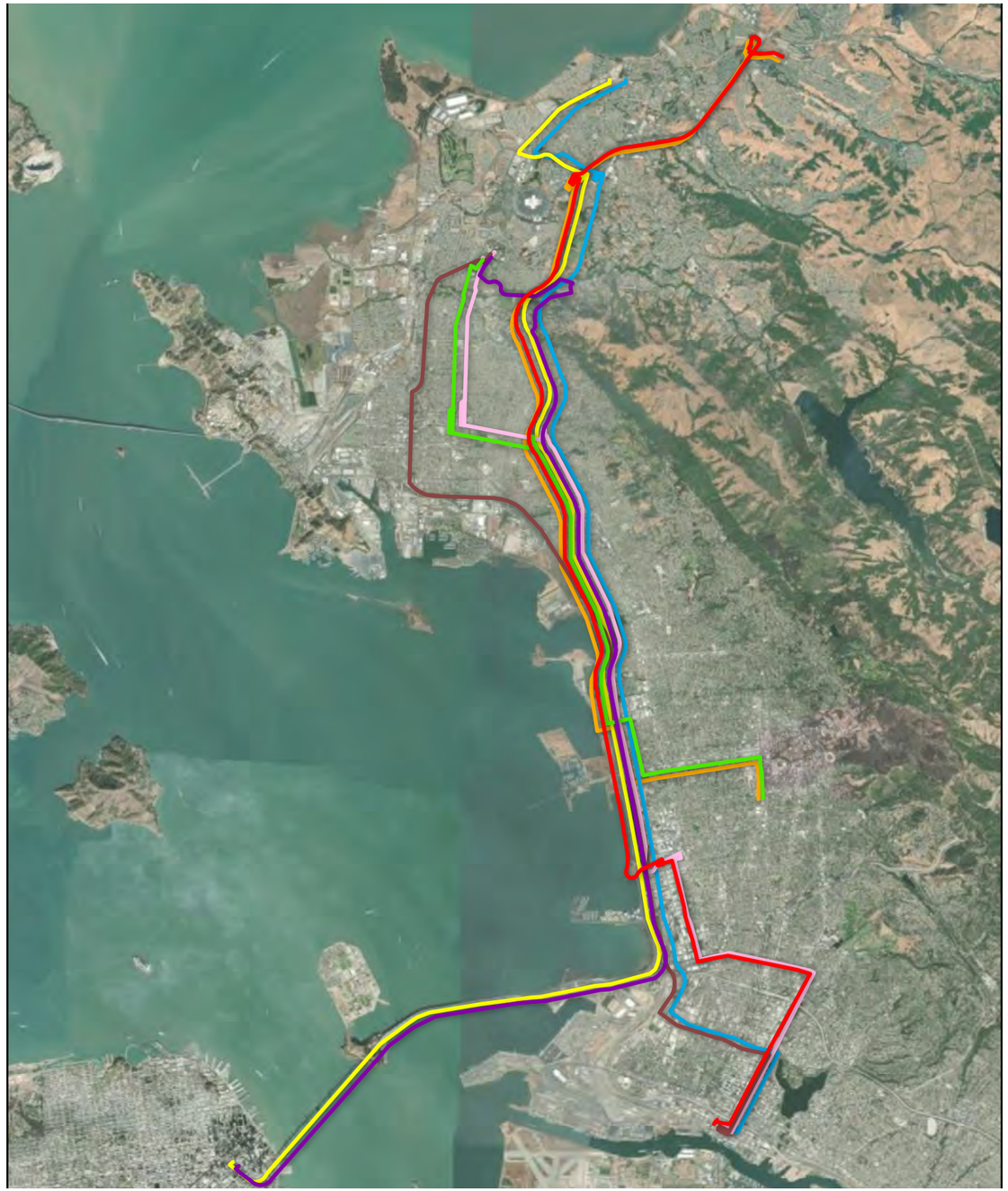
Fourth Street Shopping Area

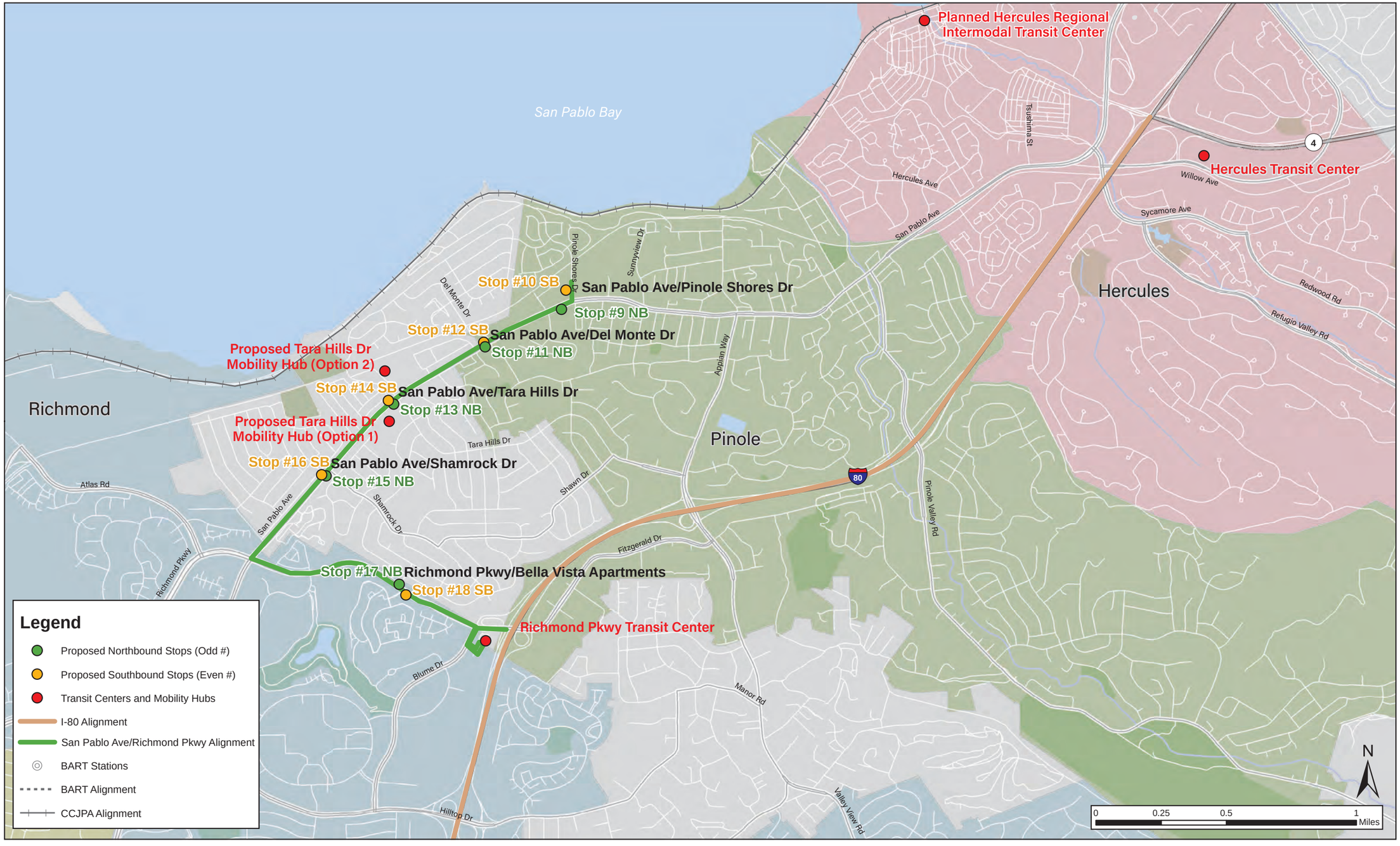
- Artis Coffee[1]
- Amazon 4-Star[1]
- Peets Coffee[1]
- Sur La Table[1]
- Apple[1]
- Lulumon[1]
- Sierra Nevada Tasting Room[1]
- Takara Sake[1]
- Anthropologie[1]
- Vivarium[1]
- Zut![1]
- Truitt & White Hardware[1]
- Market Hall Foods[1]

Note: **Bold** indicates companies that emailed out information to their employees or constituents.
Asterisk (*) indicates that a focus group was held at the employer's office.
[1] PlaceWorks canvassed in-person flyers and information to store managers.

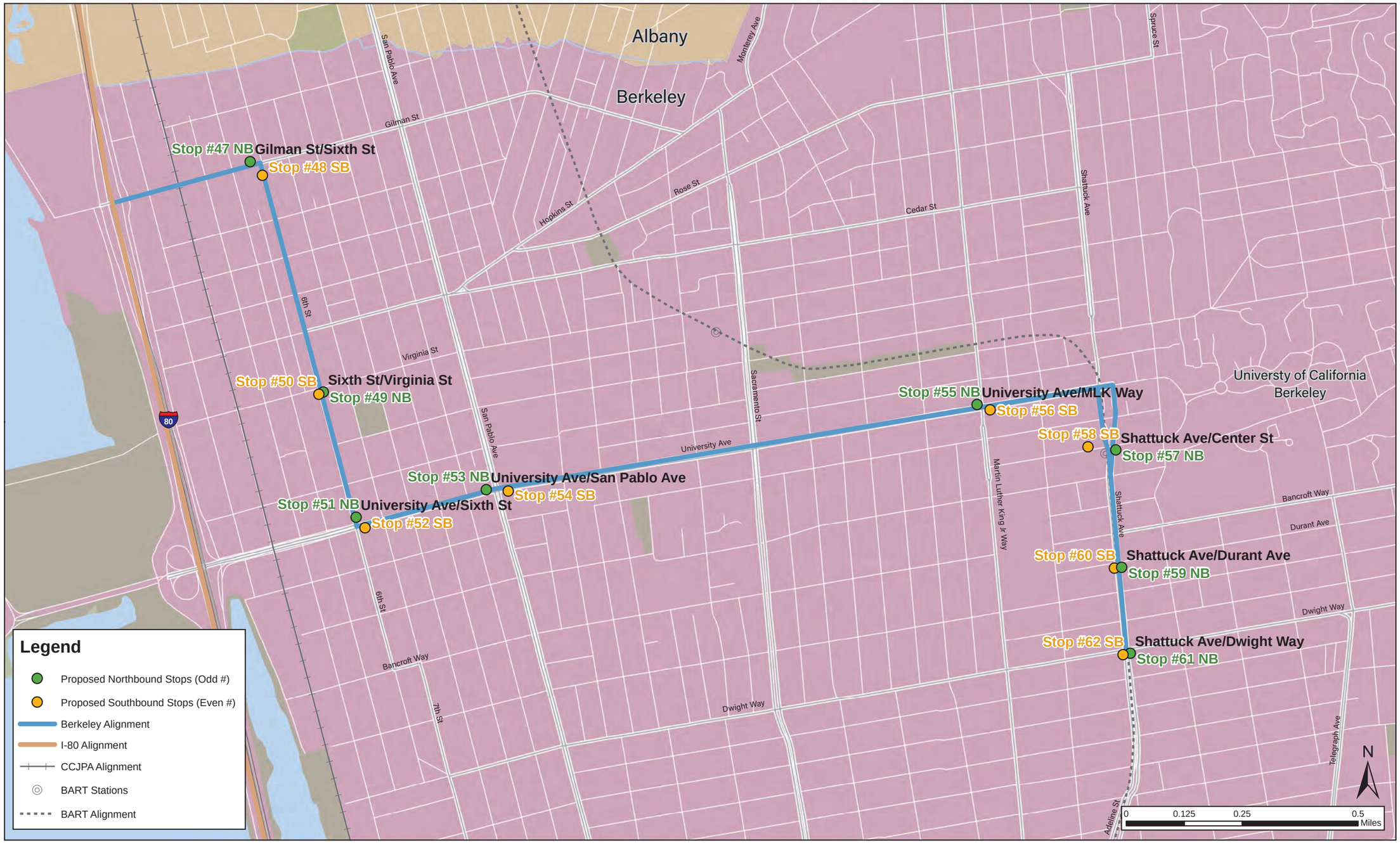
D.

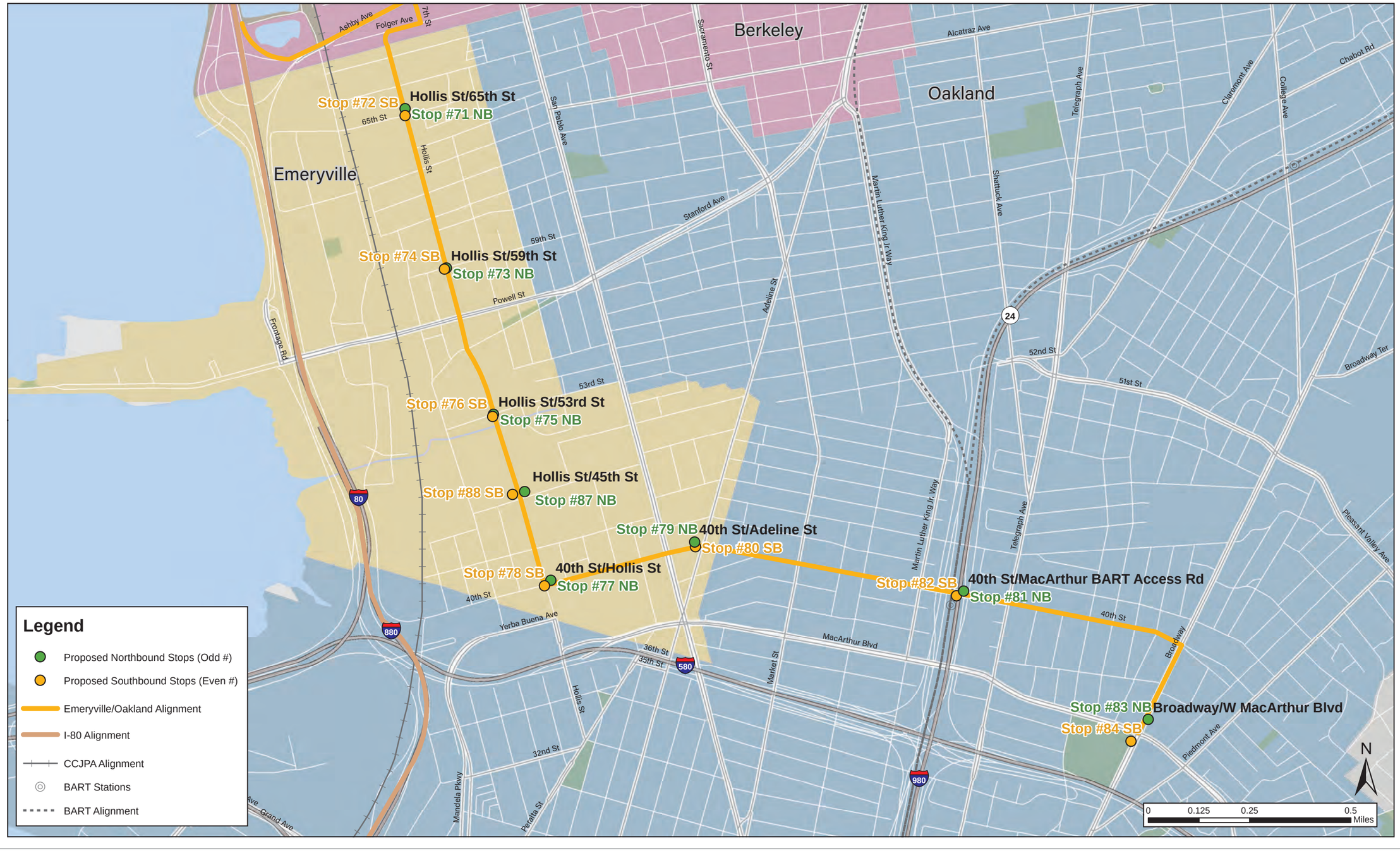
PROPOSED STOP AND INTERSECTION IMPROVEMENTS

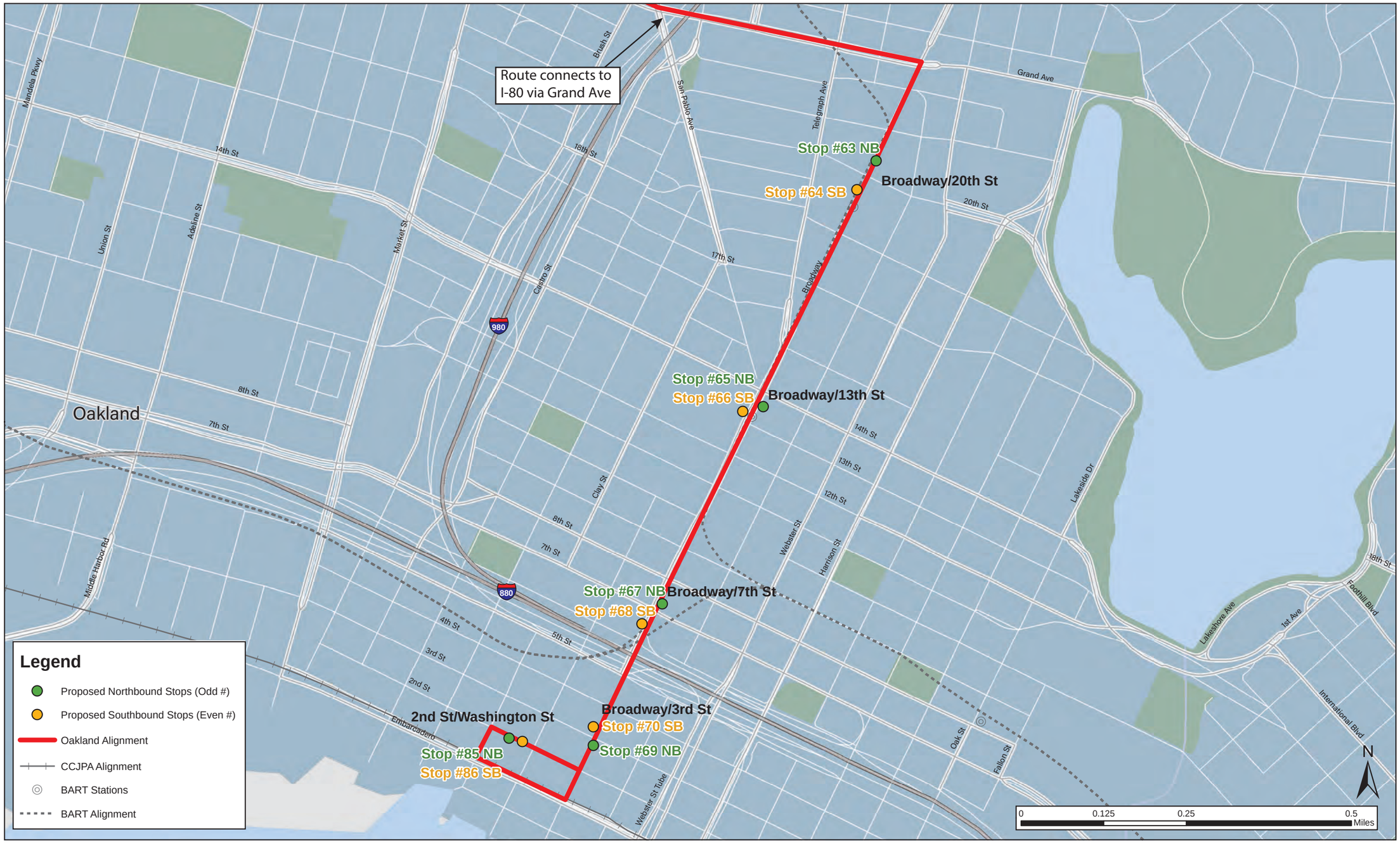



San Pablo Bay
Planned Hercules Regional Intermodal Transit Center
Hercules Transit Center
Hercules
Pinole
Richmond
Stop #10 SB
San Pablo Ave/Pinole Shores Dr
Stop #9 NB
Stop #12 SB
San Pablo Ave/Del Monte Dr
Stop #11 NB
Proposed Tara Hills Dr Mobility Hub (Option 2)
Stop #14 SB
San Pablo Ave/Tara Hills Dr
Stop #13 NB
Proposed Tara Hills Dr Mobility Hub (Option 1)
Stop #16 SB
San Pablo Ave/Shamrock Dr
Stop #15 NB
Stop #17 NB
Richmond Pkwy/Bella Vista Apartments
Stop #18 SB
Richmond Pkwy Transit Center
Tsushima St
Hercules Ave
San Pablo Ave
Willow Ave
Sycamore Ave
Redwood Rd
Refugio Valley Rd
Pinole Shores Dr
Sunnyview Dr
Del Monte Dr
Appian Way
Tara Hills Dr
Shawn Dr
Atlas Rd
Shamrock Dr
Fitzgerald Dr
Pinole Valley Rd
Richmond Pkwy
Blume Dr
Manor Rd
Hilltop Dr
Valley View Rd
80
4
Legend
Proposed Northbound Stops (Odd #)
Proposed Southbound Stops (Even #)
Transit Centers and Mobility Hubs
I-80 Alignment
San Pablo Ave/Richmond Pkwy Alignment
BART Stations
BART Alignment
CCJPA Alignment
N
0
0.25
0.5
1
Miles


Contra Costa College
Broadway/Rumrill Blvd
Stop #20 SB
Stop #19 NB
Stop #33 NB
Stop #34 SB
San Pablo Ave/Stone St
Stop #22 SB
Rumrill Blvd/Rd 20
Stop #21 NB
Proposed San Pablo Dam Rd Mobility Hub
23rd St/Dover Ave
Stop #35 NB
Stop #36 SB
Stop #23 NB
Stop #24 SB
Rumrill Blvd/Market Ave
San Pablo
Stop #25 NB
Stop #26 SB
13th St/Rheem Ave
23rd St/Rheem Ave
Stop #38 SB
Stop #37 NB
Richmond
Stop #40 SB
23rd St/Garvin Ave
Stop #39 NB
Stop #27 NB
Stop #28 SB
Harbour Way/Roosevelt Ave
Stop #41 NB
23rd St/Preble Ave
Stop #42 SB
Macdonald Ave/27th St/Broadway
Stop #30 SB
Stop #29 NB
Harbour Way/Macdonald Ave
Stop #43 NB
Stop #44 SB
Macdonald Ave/37th St
Stop #46 SB
Stop #45 NB
Proposed Bissell Ave Mobility Hub
El Cerrito
Stop #32 SB
Stop #31 NB
Harbour Way/Maine Ave
South of Cutting Blvd route connects to I-80 via I-580
Proposed Wright Ave Mobility Hub
Legend
Proposed Northbound Stops (Odd #)
Proposed Southbound Stops (Even #)
Transit Centers and Mobility Hubs
23rd St/Macdonald Ave Alignment
I-80 Alignment
Rumrill Blvd/Harbour Way Alignment
BART Stations
BART Alignment
CCJPA Alignment
Broadway
Giant Rd
Parr Blvd
Road 20
3rd St
Brookside Dr
Rumrill Blvd
Richmond Pkwy
Dover Ave
Church Ln
El Portal Dr
Barranca Ave
Appian Way
Market Ave
1st St
Chesley Ave
23rd St
Vale Rd
San Pablo Dam Rd
Maricopa Ave
Rheem Ave
13th St
McBryde Ave
29th St
34th St
80
Arlington Blvd
Esmond Ave
Castro St
Garvin Ave
Solano Ave
Wilson Ave
30th St
Roosevelt Ave
Barrett Ave
2nd St
Macdonald Ave
Dimm St
Garrard Blvd
Marina Way
Ohio Ave
Center Ave
37th St
38th St
Maine Ave
Carlson Blvd
San Pablo Ave
Arlington Blvd
580
Cutting Blvd
N
0 0.25 0.5 1 Miles


Albany
Berkeley
Universty of California
Berkeley
San Pablo Ave
Gilman St
Monterey Ave
Spruce St
Hopkins St
Rose St
Cedar St
Shattuck Ave
6th St
Virginia St
Sacramento St
University Ave
Martin Luther King Jr Way
Bancroft Way
Durant Ave
Dwight Way
7th St
Telegraph Ave
Adeline St
80
Stop #47 NB Gilman St/Sixth St
Stop #48 SB
Stop #50 SB Sixth St/Virginia St
Stop #49 NB
Stop #53 NB University Ave/San Pablo Ave
Stop #54 SB
Stop #51 NB University Ave/Sixth St
Stop #52 SB
Stop #55 NB University Ave/MLK Way
Stop #56 SB
Stop #58 SB Shattuck Ave/Center St
Stop #57 NB
Stop #60 SB Shattuck Ave/Durant Ave
Stop #59 NB
Stop #62 SB Shattuck Ave/Dwight Way
Stop #61 NB
Legend
Proposed Northbound Stops (Odd #)
Proposed Southbound Stops (Even #)
Berkeley Alignment
I-80 Alignment
CCJPA Alignment
BART Stations
BART Alignment
N
0 0.125 0.25 0.5
Miles


Berkeley
Oakland
Emeryville
Ashby Ave
Folger Ave
7th St
Sacramento St
Alcatraz Ave
Telegraph Ave
Claremont Ave
College Ave
Chabot Rd
San Pablo Ave
Hollis St
Martin Luther King Jr Way
Shattuck Ave
Stanford Ave
59th St
Powell St
Adeline St
Frontage Rd
24
52nd St
51st St
Broadway Ter
53rd St
Stop #72 SB
Hollis St/65th St
Stop #71 NB
65th St
Stop #74 SB
Hollis St/59th St
Stop #73 NB
Stop #76 SB
Hollis St/53rd St
Stop #75 NB
Stop #88 SB
Hollis St/45th St
Stop #87 NB
80
Stop #79 NB
40th St/Adeline St
Stop #80 SB
Stop #78 SB
40th St/Hollis St
Stop #77 NB
Stop #82 SB
40th St/MacArthur BART Access Rd
Stop #81 NB
40th St
Broadway
Pleasant Valley Ave
Telegraph Ave
Martin Luther King Jr. Way
880
Yerba Buena Ave
MacArthur Blvd
36th St
35th St
580
Market St
Hollis St
Stop #83 NB
Broadway/W MacArthur Blvd
Stop #84 SB
Piedmont Ave
32nd St
980
Mandela Pkwy
Peralta St
Grand Ave
Legend
Proposed Northbound Stops (Odd #)
Proposed Southbound Stops (Even #)
Emeryville/Oakland Alignment
I-80 Alignment
CCJPA Alignment
BART Stations
BART Alignment
N
0
0.125
0.25
0.5
Miles


Route connects to
I-80 via Grand Ave
Stop #63 NB
Broadway/20th St
Stop #64 SB
Stop #65 NB
Stop #66 SB
Broadway/13th St
Stop #67 NB
Broadway/7th St
Stop #68 SB
Broadway/3rd St
Stop #70 SB
Stop #69 NB
2nd St/Washington St
Stop #85 NB
Stop #86 SB
Oakland
Brush St
San Pablo Ave
Telegraph Ave
Grand Ave
Mandela Pkwy
14th St
18th St
20th St
Union St
Adeline St
Market St
Castro St
17th St
Broadway
8th St
7th St
Clay St
12th St
13th St
Webster St
Harrison St
Lakeside Dr
Middle Harbor Rd
4th St
5th St
3rd St
2nd St
Embarcadero
Webster St Tube
Oak St
Fallon St
Lakeshore Ave
1st Ave
Foothill Blvd
International Blvd
980
880
Legend
Proposed Northbound Stops (Odd #)
Proposed Southbound Stops (Even #)
Oakland Alignment
CCJPA Alignment
BART Stations
BART Alignment
N
0
0.125
0.25
0.5
Miles

StopID	Project ID#	Intersection Name	Jurisdiction	Direction	Existing Stop Side	Proposed Improvement	Tier 1 Amenities					Tier 2 Amenities	
							ADA Landing Zone	Shelter	Bench	Light	Trash Receptacle	System Map	Bike Parking
9	BS1	San Pablo Ave/Crestview Dr	Pinole	NB	Far Side	-	-	X	X	X	X	X	X
10	BS1	San Pablo Ave/Pinole Shores Dr	Pinole	SB	Near Side	-	-	X	X	X	X	X	X
11	BS1	San Pablo Ave/Del Monte Dr	Pinole	NB	Far Side	-	-	X	-	X	X	X	X
12	BS1	San Pablo Ave/Del Monte Dr	Pinole	SB	Near Side	-	-	X	X	X	X	X	X
13	BS1	San Pablo Ave/Tara Hills Dr	Unincorporated CC County	NB	Near Side	-	-	X	-	X	X	X	X
14	BS1	San Pablo Ave/Tara Hills Dr	Unincorporated CC County	SB	Far Side	-	-	X	-	X	X	X	X
15	BS1	San Pablo Ave/Shamrock Dr	Unincorporated CC County	NB	Near Side	Relocate to Far Side	X	X	X	X	X	X	X
16	BS1	San Pablo Ave/Shamrock Dr	Unincorporated CC County	SB	Far Side	-	-	-	-	X	X	X	X
17	BS1	Richmond Pkwy/Bella Vista Apartments	Richmond	NB	Far Side	-	-	X	X	-	X	X	X
18	BS1	Richmond Pkwy/Bella Vista Apartments	Richmond	SB	Far Side	-	-	X	-	X	X	X	X
33	BS2	San Pablo Ave/Stone St	San Pablo	NB	Midblock	-	-	X	X	X	X	X	X
34	BS2	San Pablo Ave/Stone St	San Pablo	SB	Midblock	-	-	-	-	X	-	-	X
35	BS2	23rd St/Dover Ave	San Pablo	NB	Near Side	Relocate to Far Side	-	X	X	X	X	X	X
36	BS2	23rd St/Dover Ave	San Pablo	SB	Near Side	Relocate to Far Side	-	X	X	X	X	X	X
37	BS2	23rd St/Rheem Ave	Richmond	NB	Near Side	-	-	X	X	X	X	X	X
38	BS2	23rd St/Rheem Ave	Richmond	SB	Near Side	-	-	X	X	X	X	X	X
39	BS2	23rd St/Garvin Ave	Richmond	NB	N/A	New Stop - Far Side	-	X	X	X	X	X	X
40	BS2	23rd St/Garvin Ave	Richmond	SB	Near Side	-	-	X	-	X	X	X	X
41	BS2	23rd St/Preble Ave	Richmond	NB	Far Side	-	-	X	-	X	-	X	X
42	BS2	22nd St/Nevin Ave	Richmond	SB	Far Side	-	-	X	X	X	X	X	X
43	BS2	Macdonald Ave/27th St/Broadway	Richmond	NB	Far Side	-	-	X	-	X	-	X	X
44	BS2	Macdonald Ave/27th St/Broadway	Richmond	SB	Far Side	-	-	X	-	X	-	X	X
45	BS2	Macdonald Ave/37th St	Richmond	NB	Far Side	-	-	X	X	X	-	X	X
46	BS2	Macdonald Ave/37th St	Richmond	SB	Near Side	Relocate to Far Side	-	X	X	X	X	X	X
19	BS3	Broadway/Rumrill Blvd	San Pablo	NB	N/A	New Stop - Far Side	X	X	X	X	X	X	X
20	BS3	Broadway/Rumrill Blvd	San Pablo	SB	N/A	New Stop - Far Side	X	X	X	X	X	X	X
21	BS3	Rumrill Blvd/Rd 20	San Pablo	NB	Near Side	-	-	X	X	X	X	X	X
22	BS3	Rumrill Blvd/Rd 20	San Pablo	SB	Far Side	-	-	X	X	X	X	X	X
23	BS3	Rumrill Blvd/Market Ave	San Pablo	NB	Far Side	-	-	X	X	X	X	X	X
24	BS3	Rumrill Blvd/Market Ave	San Pablo	SB	Far Side	-	-	X	X	X	X	X	X
25	BS3	13th St/Rheem Ave	Richmond	NB	Far Side	-	-	X	X	X	X	X	X
26	BS3	13th St/Rheem Ave	Richmond	SB	Far Side	-	-	X	X	X	X	X	X
27	BS3	Harbour Way/Roosevelt Ave	Richmond	NB	Near Side	Relocate to Far Side	-	X	X	X	X	X	X
28	BS3	Harbour Way/Roosevelt Ave	Richmond	SB	Near Side	-	X	X	X	X	X	X	X
29	BS3	Harbour Way/Macdonald Ave	Richmond	NB	N/A	New Stop - Far Side	-	X	X	X	X	X	X
30	BS3	Harbour Way/Macdonald Ave	Richmond	SB	Far Side	-	-	X	X	X	X	X	X
31	BS3	Harbour Way/Maine Ave	Richmond	NB	N/A	New Stop - Far Side	-	X	X	X	X	X	X
32	BS3	Harbour Way/Maine Ave	Richmond	SB	Near Side	-	-	X	X	X	-	X	X

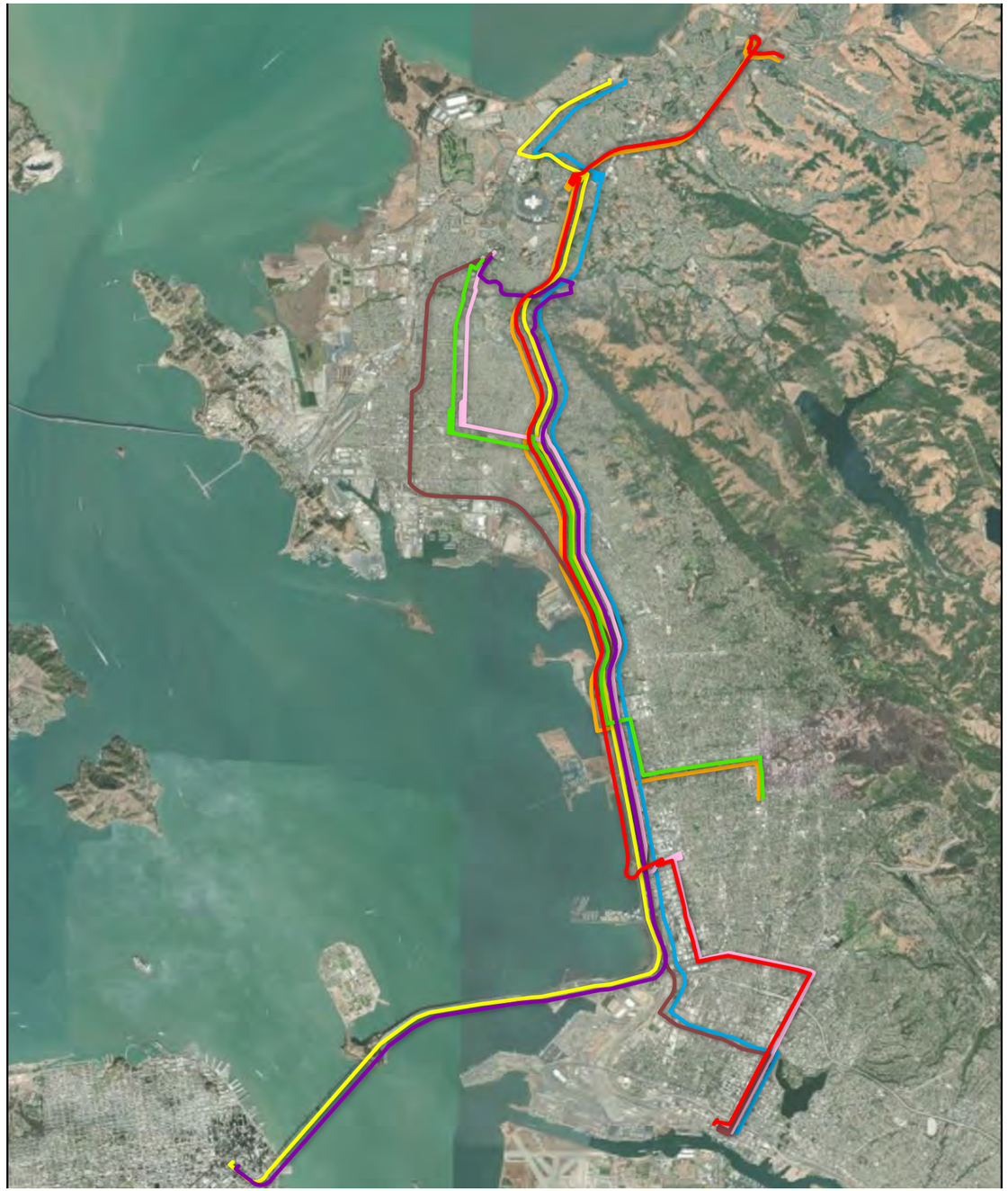
StopID	Project ID#	Intersection Name	Jurisdiction	Direction	Existing Stop Side	Proposed Improvement	Tier 1 Amenities					Tier 2 Amenities	
							ADA Landing Zone	Shelter	Bench	Light	Trash Receptacle	System Map	Bike Parking
47	BS4	Gilman St/Sixth St	Berkeley	NB	Far Side	-	-	X	X	X	X	X	-
48	BS4	Gilman St/Sixth St	Berkeley	SB	Far Side	-	X	X	X	X	X	X	X
49	BS4	Sixth St/Virginia St	Berkeley	NB	Near Side	-	-	X	X	X	X	X	X
50	BS4	Sixth St/Virginia St	Berkeley	SB	Far Side	-	-	X	X	X	X	X	X
51	BS4	University Ave/Sixth St	Berkeley	NB	Far Side	-	-	X	X	X	-	X	X
52	BS4	University Ave/Sixth St	Berkeley	SB	Far Side	-	-	X	-	X	-	X	-
53	BS4	University Ave/San Pablo Ave	Berkeley	NB	Far Side	-	-	X	X	X	X	X	X
54	BS4	University Ave/San Pablo Ave	Berkeley	SB	Far Side	-	-	X	X	X	-	X	X
55	BS4	University Ave/MLK Way	Berkeley	NB	Near Side	Relocate to Far Side	-	X	X	X	X	X	X
56	BS4	University Ave/MLK Way	Berkeley	SB	Far Side	-	-	X	-	X	X	X	X
57	BS4	Shattuck Ave/Center St	Berkeley	NB	Near Side	-	-	-	-	-	-	-	X
58	BS4	Shattuck Ave/Center St	Berkeley	SB	Near Side	-	-	-	-	-	-	X	-
59	BS4	Shattuck Ave/Durant Ave	Berkeley	NB	Near Side	-	-	X	-	X	-	X	-
60	BS4	Shattuck Ave/Durant Ave	Berkeley	SB	Far Side	-	-	X	-	X	-	X	-
61	BS4	Shattuck Ave/Dwight Way	Berkeley	NB	Near Side	-	-	X	-	X	-	X	X
62	BS4	Shattuck Ave/Dwight Way	Berkeley	SB	Far Side	-	-	-	-	X	-	-	X
71	BS5	Hollis St/65th St	Emeryville	NB	Far Side	-	-	X	-	X	-	X	-
72	BS5	Hollis St/65th St	Emeryville	SB	Far Side	-	-	X	X	X	-	X	-
73	BS5	Hollis St/59th St	Emeryville	NB	Far Side	-	-	X	X	X	-	X	X
74	BS5	Hollis St/59th St	Emeryville	SB	Far Side	-	-	X	-	-	-	X	X
75	BS5	Hollis St/53rd St	Emeryville	NB	Far Side	-	-	X	X	X	-	X	X
76	BS5	Hollis St/53rd St	Emeryville	SB	Far Side	-	-	-	X	X	-	X	X
87	BS5	Hollis St/45th St	Emeryville	NB	Far Side	-	-	X	X	X	-	X	X
88	BS5	Hollis St/45th St	Emeryville	SB	Near Side	-	-	X	X	X	-	X	X
77	BS5	40th St/Hollis St	Emeryville	NB	Near Side	-	-	X	X	X	-	X	X
78	BS5	40th St/Hollis St	Emeryville	SB	Far Side	-	-	X	X	X	-	X	X
79	BS5	40th St/Adeline St	Emeryville	NB	Near Side	-	-	X	-	-	-	X	X
80	BS5	40th St/Adeline St	Emeryville	SB	Far Side	-	-	X	-	-	-	X	X
81	BS5	40th St/MacArthur BART Access Rd	Oakland	NB	Far Side	-	-	X	-	X	X	X	X
82	BS5	40th St/MacArthur BART Access Rd	Oakland	SB	Near Side	-	-	-	-	-	-	X	-
83	BS5	Broadway/W MacArthur Blvd	Oakland	NB	Far Side	-	-	X	-	X	X	X	X
84	BS5	Broadway/W MacArthur Blvd	Oakland	SB	Far Side	-	-	-	-	X	-	X	X
63	BS6	Broadway/20th St	Oakland	NB	Far Side	-	-	X	-	-	-	X	X
64	BS6	Broadway/20th St	Oakland	SB	Far Side	-	-	X	-	X	-	X	-
65	BS6	Broadway/13th St	Oakland	NB	Far Side	-	-	-	-	-	-	X	X
66	BS6	Broadway/13th St	Oakland	SB	Near Side	-	-	-	-	-	-	-	-
67	BS6	Broadway/7th St	Oakland	NB	Far Side	-	-	-	-	-	-	X	X
68	BS6	Broadway/7th St	Oakland	SB	Far Side	-	-	X	X	-	X	X	X
69	BS6	Broadway/3rd St	Oakland	NB	Near Side	-	-	X	X	X	X	X	X
70	BS6	Broadway/3rd St	Oakland	SB	Near Side	-	-	X	X	-	X	X	X
85	BS6	2nd St/Washington St	Oakland	NB	Near Side	-	-	X	X	X	X	X	X
86	BS6	2nd St/Washington St	Oakland	SB	Near Side	-	-	X	X	X	X	X	X

Project ID#	Routes	Intersection	Jurisdiction	County
TSP1	6, 7	23rd St/Dover Ave	San Pablo	Contra Costa
TSP1	6, 7	23rd St/Market Ave	San Pablo	Contra Costa
TSP1	6, 7	23rd St/Rheem Ave	Richmond	Contra Costa
TSP1	6, 7	23rd St/Lincoln Ave	Richmond	Contra Costa
TSP1	6, 7	23rd St/Garvin Ave	Richmond	Contra Costa
TSP1	6, 7	23rd St//23rd St	Richmond	Contra Costa
TSP1	6, 7	23rd St/Barrett Ave	Richmond	Contra Costa
TSP1	6, 7	23rd St/Nevin Ave	Richmond	Contra Costa
TSP1	6, 7	Macdonald Ave/23rd St	Richmond	Contra Costa
TSP1	6, 7	22nd St/Roosevelt Ave	Richmond	Contra Costa
TSP1	6, 7	Barrett Ave/22nd St	Richmond	Contra Costa
TSP1	6, 7	22nd St/Nevin Ave	Richmond	Contra Costa
TSP1	6, 7	Macdonald Ave/22nd St	Richmond	Contra Costa
TSP1	6, 7	Macdonald Ave/27th St/Broadway	Richmond	Contra Costa
TSP1	6, 7	Macdonald Ave/33rd St	Richmond	Contra Costa
TSP1	6, 7	Macdonald Ave/37th St	Richmond	Contra Costa
TSP1	6, 7	Macdonald Ave/42nd St	Richmond	Contra Costa
TSP1	6, 7	Macdonald Ave/44th St	Richmond	Contra Costa
TSP2	8	Broadway/Rumrill Blvd	San Pablo	Contra Costa
TSP2	8	Rumrill Blvd/Brookside Dr	San Pablo	Contra Costa
TSP2	8	Rumrill Blvd/Market Ave	San Pablo	Contra Costa
TSP2	8	Rumrill Blvd/Pine Ave	San Pablo	Contra Costa
TSP2	8	Rumrill Blvd/Pine Ave	San Pablo	Contra Costa
TSP2	8	Rumrill Blvd/Sanford Ave	San Pablo	Contra Costa
TSP2	8	13th St/Rheem Ave	Richmond	Contra Costa
TSP2	8	Harbour Way/Pennsylvania Ave/10th St	Richmond	Contra Costa
TSP2	8	Harbour Way/Roosevelt Ave	Richmond	Contra Costa
TSP2	8	Harbour Way/Barrett Ave	Richmond	Contra Costa
TSP2	8	Harbour Way/Nevin Ave	Richmond	Contra Costa
TSP2	8	Harbour Way/Macdonald Ave	Richmond	Contra Costa
TSP2	8	Harbour Way/Bissell Ave	Richmond	Contra Costa
TSP2	8	Harbour Way/Chanslor Ave	Richmond	Contra Costa
TSP2	8	Harbour Way/Ohio Ave	Richmond	Contra Costa
TSP2	8	Harbour Way/Maine Ave	Richmond	Contra Costa
TSP2	8	Harbour Way/Cutting Blvd	Richmond	Contra Costa
TSP2	8	Harbour Way/Hoffman Blvd/I-580 SB On	Richmond	Contra Costa
TSP2	8	Marina Way S/Wright Ave	Richmond	Contra Costa
TSP2	8	Marina Bay Pkwy/Meeker Ave	Richmond	Contra Costa
TSP3	5	San Pablo Dam Rd/Morrow Dr	San Pablo	Contra Costa
TSP3	5	El Portal Dr/I-80 SB On/I-80 SB On	Contra Costa County	Contra Costa
TSP3	5	El Portal Dr/I-80 NB Off/I-80 NB On	Contra Costa County	Contra Costa
TSP3	5	El Portal Dr/San Pablo Dam Rd	Contra Costa County	Contra Costa

Project ID#	Routes	Intersection	Jurisdiction	County
TSP4	1, 7	Gilman St/Sixth St	Berkeley	Alameda
TSP4	1, 7	Sixth St/Cedar St	Berkeley	Alameda
TSP4	1, 7	Sixth St/Virginia St	Berkeley	Alameda
TSP4	1, 7	Sixth St/Hearst St	Berkeley	Alameda
TSP4	1, 7	Shattuck Ave/Addison St	Berkeley	Alameda
TSP4	1, 7	Shattuck Ave/Center St	Berkeley	Alameda
TSP4	1, 7	Shattuck Ave/Allston Way	Berkeley	Alameda
TSP4	1, 7	Shattuck Ave/Kittredge St	Berkeley	Alameda
TSP4	1, 7	Shattuck Ave/Bancroft Way	Berkeley	Alameda
TSP4	1, 7	Shattuck Ave/Durant Ave	Berkeley	Alameda
TSP4	1, 7	Shattuck Ave/Channing Way	Berkeley	Alameda
TSP4	1, 7	Shattuck Ave/Haste St	Berkeley	Alameda
TSP4	1, 7	Shattuck Ave/Dwight Way	Berkeley	Alameda
TSP5	2, 2A, 6	Hollis St/65th St	Emeryville	Alameda
TSP5	2, 2A, 6	Hollis St/64th St	Emeryville	Alameda
TSP5	2, 2A, 6	Hollis St/59th St	Emeryville	Alameda
TSP5	2, 2A, 6	Powell St/Hollis St	Emeryville	Alameda
TSP5	2, 2A, 6	Hollis St/Stanford Ave	Emeryville	Alameda
TSP5	2, 2A, 6	Hollis St/53rd St	Emeryville	Alameda
TSP5	2, 2A, 6	Hollis St/Park Ave	Emeryville	Alameda
TSP5	2, 2A, 6	40th St/Hollis St	Emeryville	Alameda
TSP5	2, 2A, 6	40th St/Emery St	Emeryville	Alameda
TSP5	2, 2A, 6	40th St/Adeline St	Emeryville	Alameda
TSP5	2, 2A, 6	40th St/Market St	Oakland	Alameda
TSP5	2, 2A, 6	40th St/West St	Oakland	Alameda
TSP5	2, 2A, 6	40th St/MLK Way	Oakland	Alameda
TSP5	2, 2A, 6	40th St/MacArthur BART Access Rd	Oakland	Alameda
TSP5	2, 2A, 6	40th St/Telegraph Ave	Oakland	Alameda
TSP5	2, 2A, 6	40th St/Webster St	Oakland	Alameda
TSP5	2, 2A, 6	40th St/Shafter Ave	Oakland	Alameda
TSP5	2, 2A, 6	Ashby Ave/7th St	Berkeley	Alameda
TSP6	2B, 3, 8	W Grand Ave/Mandela Pkwy	Oakland	Alameda
TSP6	2B, 3, 8	W Grand Ave/Poplar St	Oakland	Alameda
TSP6	2B, 3, 8	W Grand Ave/Adeline St	Oakland	Alameda
TSP6	2B, 3, 8	W Grand Ave/Market St	Oakland	Alameda
TSP6	2B, 3, 8	W Grand Ave/Brush St	Oakland	Alameda
TSP6	2B, 3, 8	W Grand Ave/Martin Luther King Jr. Way	Oakland	Alameda
TSP6	2B, 3, 8	W Grand Ave/Northgate Ave	Oakland	Alameda
TSP6	2B, 3, 8	W Grand Ave/Telegraph Ave	Oakland	Alameda
TSP6	2B, 3, 8	W Grand Ave/Frontage Rd	Oakland	Alameda

E.

CONCEPTUAL LAYOUTS AND COST ESTIMATES



WCCTAC - Transit Freeway Access Improvements

PLANNING COST ESTIMATE SUMMARY

Date of Estimates: 8/2019

Location:	Project Number	Transit Center Items	Contingency	Soft Costs	Total
Hercules Transit Center Addition	TC1	$ 13,000,000	$ 2,600,000	$ 3,900,000	**$ 19,500,000**
Richmond Parkway Transit Center Reconfiguration	TC2/TC2-I	$ 30,980,000	$ 6,196,000	$ 9,300,000	**$ 46,476,000**

Location:	Project Number	Roadway	Structural	Electrical	EVCS	ROW	Support Costs	Total
Hercules Access Improvement	FA1	$ 2,460,000		$ 60,000		$ 220,000	$ 860,000	**$ 3,600,000**
Richmond Parkway Access Improvement	FA2	$ 590,000		$ 30,000			$ 210,000	**$ 900,000**
San Pablo Dam Road Freeway Access Improvement	FA3	$ 2,200,000	$ 1,250,000			$ 20,000	$ 1,150,000	**$ 4,600,000**
I-80 Part-Time Transit Lanes	TL1	$ 4,540,000					$ 1,500,000	**$ 6,000,000**
Tara Hills Drive Mobility Hub Option 1	MH1	$ 1,840,000		$ 80,000	$ 200,000	$ 700,000	$ 780,000	**$ 3,600,000**
Tara Hills Drive Mobility Hub Option 2	MH2	$ 7,370,000		$ 300,000	$ 425,000	$ 2,320,000	$ 2,910,000	**$ 13,300,000**
San Pablo Dam Road Mobility Hub	MH3	$ 7,100,000			$ 350,000		$ 2,460,000	**$ 9,900,000**
Bissell Avenue (Richmond East) Park and Ride	MH4	$ 2,200,000		$ 19,500	$ 275,000		$ 830,000	**$ 3,300,000**
Wright Avenue (Richmond West) Mobility Hub	MH5	$ 7,170,000	$ 1,700,000	$ 300,000	$ 450,000		$ 3,180,000	**$ 12,800,000**

General Notes for all estimates within this package:

Unit costs were obtained from Caltrans Cost Database (2017-2019 Year)
ROW costs were determined from average $/SF within the project area
All values are in 2019 dollars
Engineer's opinion of probable cost are for programmatic purposes only.
Estimates are based on current available information and do not include field verification and survey.
Utility verification and coordination not included in cost.

WCCTAC - Transit Freeway Access Improvements

PLANNING COST ESTIMATE SUMMARY

Description - Hercules
Transit Center Addition
Project TC1

Date of Estimate: 8/2019

Transit Center Items:	Quantity	Unit	Unit Cost	Item Total	Total
Mobilization (10%)	1	LS	$ 1,210,000	$ 1,210,000	
WPC / Treatment / SWPPP (2%)	1	LS	$ 242,000	$ 242,000	
Site Preparation	74,080	SF	$ 10	$ 741,000	
Remove concrete (Curb & Gutter)	750	LF	$ 15	$ 12,000	
Landscape & Irrigation/MS4 Requirements	50	SF	$ 40	$ 2,000	
Concrete Pavement	700	SF	$ 20	$ 14,000	
Striping	150	LF	$ 3	$ 1,000	
Parking Structure (Includes Ramp)	109,100	SF	$ 90	$ 9,819,000	
Class I Bike Parking (Double Bike Lockers)	18	EA	$ 5,000	$ 90,000	
Real-Time Arrival Displays	2	EA	$ 3,500	$ 7,000	
Electric Vehicle Charging Stations (EVCS)	1	LS	$ 860,000	$ 860,000	
Power Stations	44	EA	$ -	$ -	
Power Infrastructure	44	EA	$ 15,000	$ 660,000	
Additional PG&E Power Distribution and Service Infra.	1	LS	$ 200,000	$ 200,000	
SUBTOTAL					**$ 13,000,000**
CONTINGENCY (20%)					**$ 2,600,000**
TOTAL CAPITAL OUTLAY COSTS (2019 YEAR)					**$ 15,600,000**

Soft Costs	Quantity	Unit	Unit Cost	Item Total	Total
Preliminary Eng/Envir (3%)	1	LS	$ 468,000	$ 468,000	
Final Design (12%)	1	LS	$ 1,872,000	$ 1,872,000	
Construction Administration (10%)	1	LS	$ 1,560,000	$ 1,560,000	
Subtotal "Soft Costs"					**$ 3,900,000**
Grand Total					**$ 19,500,000**

WCCTAC - Transit Freeway Access Improvements

PLANNING COST ESTIMATE SUMMARY

Description - Richmond Parkway
Transit Center Reconfiguration/Retrofit
Project TC2

Date of Estimate: 8/2019

Transit Center Items:	Quantity	Unit	Unit Cost	Item Total	Total
Mobilization (10%)	1	LS	$ 3,030,000	$ 3,030,000	
Traffic Control (5%)	1	LS	$ 1,515,000	$ 1,515,000	
WPC / Treatment / SWPPP (2%)	1	LS	$ 606,000	$ 606,000	
Site Preparation	167,200	SF	$ 10	$ 1,672,000	
Pavement Excavation	11,250	CY	$ 80	$ 900,000	
Remove concrete (Curb & Gutter)	5,850	LF	$ 15	$ 88,000	
Remove concrete (Sidewalk, Bus Bays)	2,000	CY	$ 35	$ 70,000	
Asphalt Pavement	44,150	SF	$ 18	$ 795,000	
Curb & Gutter	5,000	LF	$ 65	$ 325,000	
Concrete Pavement	65,200	SF	$ 20	$ 1,304,000	
Striping	3,150	LF	$ 3	$ 8,000	
Standard Shelter (lighting, solar, bench, trash can)	9	EA	$ 55,000	$ 495,000	
Landscape & Irrigation/MS4 Requirements	5,500	SF	$ 40	$ 220,000	
Parking Structure	169,350	SF	$ 110	$ 18,629,000	
Bridge to Parking Structure	1,200	SF	$ 400	$ 480,000	
Class I Bike Parking (Double Bike Lockers)	16	EA	$ 5,000	$ 80,000	
Real-Time Arrival Display	2	EA	$ 3,500	$ 7,000	
Electric Vehicle Charging Stations (EVCS)	1	LS	$ 755,000	$ 755,000	
Power Stations	37	EA	$ -	$ -	
Power Infrastructure	37	EA	$ 15,000	$ 555,000	
Additional PG&E Power Distribution and Service Infra.	1	LS	$ 200,000	$ 200,000	
SUBTOTAL					**$ 30,980,000**
CONTINGENCY (20%)					**$ 6,196,000**
TOTAL CAPITAL OUTLAY COSTS					**$ 37,176,000**

Soft Costs	Quantity	Unit	Unit Cost	Item Total	Total
Preliminary Eng/Envir (3%)	1	LS	$ 1,116,000	$ 1,116,000	
Final Design (12%)	1	LS	$ 4,462,000	$ 4,462,000	
Construction Administration (10%)	1	LS	$ 3,718,000	$ 3,718,000	
Subtotal "Soft Costs"					**$ 9,300,000**
Grand Total					**$ 46,476,000**

WCCTAC - Transit Freeway Access Improvements

PLANNING COST ESTIMATE SUMMARY

Description - **Richmond Transit Center**
Bus Pullout and Interin Pedestrian Access - Project TC2-I

Date of Estimate: 8/2019

Transit Center Items:	Quantity	Unit	Unit Cost	Item Total	Total
Mobilization (10%)	1	LS	$ 252,000	$ 252,000	
WPC / Treatment / SWPPP (2%)	1	LS	$ 50,400	$ 50,400	
Site Preparation	8,400	SF	$ 10	$ 84,000	
Pavement Excavation	2,100	CY	$ 80	$ 168,000	
Remove concrete (Curb & Gutter)	200	LF	$ 15	$ 3,000	
Asphalt Pavement	1,200	SF	$ 18	$ 21,600	
Curb & Gutter	450	LF	$ 65	$ 29,300	
Landscape & Irrigation/MS4 Requirements	400	SF	$ 40	$ 16,000	
Concrete Pavement (Bus Pad)	2,600	SF	$ 60	$ 156,000	
Concrete Pavement (Sidewalk)	1,300	SF	$ 40	$ 52,000	
6" Paint Stripe	150	LF	$ 3	$ 400	
Paint Pavement Marking	40	SF	$ 8	$ 400	
Soldier Pile Retaining Wall, 5 to 21 feet	2,850	SF	$ 400	$ 1,140,000	
Ramp and Stairs	950	SF	$ 35	$ 33,300	
Type 1 Retaining Wall, 3 to 10 feet	1,350	SF	$ 250	$ 337,500	
Standard Shelter (lighting, solar, bench, trash can)	3	EA	$ 55,000	$ 165,000	
Real-Time Arrival Displays	2	EA	$ 3,500	$ 7,000	
SUBTOTAL					**$ 2,520,000**
CONTINGENCY (20%)					**$ 504,000**
TOTAL CAPITAL OUTLAY COSTS (2019 YEAR)					**$ 3,024,000**

Soft Costs	Quantity	Unit	Unit Cost	Item Total	Total
Preliminary Eng/Envir (3%)	1	LS	$ 91,000	$ 91,000	
Final Design (12%)	1	LS	$ 363,000	$ 363,000	
Construction Administration (10%)	1	LS	$ 303,000	$ 303,000	
Subtotal "Soft Costs"					**$ 760,000**
Grand Total					**$ 3,784,000**

WCCTAC - Transit Freeway Access Improvements

PLANNING COST ESTIMATE SUMMARY

Description **Project FA1**
Hercules
HOV Lane Addition

Date of Estimate: 8/2019

Roadway Items:	**Quantity**	**Unit**	**Unit Cost**	**Item Total**	**Total**
Clearing and Grubbing	1	LS	$ 15,000	$ 15,000	
Roadway Excavation	5,900	CY	$ 80	$ 472,000	
Remove Concrete Sidewalk	250	SY	$ 35	$ 9,000	
Pavement	15,500	SF	$ 18	$ 279,000	
Curb & Gutter	600	LF	$ 65	$ 39,000	
Remove striping	1,650	SF	$ 4	$ 7,000	
Striping	3,250	LF	$ 3	$ 9,000	
Wayfinding/Signage	1	LS	$ 30,000	$ 30,000	
Security/Communications	1	LS	$ 200,000	$ 200,000	
Concrete Sidewalk	1,300	SF	$ 15	$ 20,000	
Traffic Signal Modification	1	LS	$ 50,000	$ 50,000	
Utility Relocation	2	EA	$ 10,000	$ 20,000	
Drainage	1	LS	$ 230,000	$ 230,000	
WPC / Treatment / SWPPP (10%)	1	LS	$ 108,000	$ 108,000	
Roadway Additions (10%)	1	LS	$ 108,000	$ 108,000	
Mobilization (10%)	1	LS	$ 159,600	$ 160,000	
Contingency (40%)	1	LS	$ 702,400	$ 703,000	
Roadway Subtotal					**$ 2,460,000**
Electrical Items:					
Relocate Lighting	2	EA	$ 20,000	$ 40,000	
Mobilization (10%)	1	LS	$ 4,000	$ 4,000	
Contingency (40%)	1	LS	$ 16,000	$ 16,000	
Electrical Subtotal					**$ 60,000**
Right of way Items:	**Quantity**	**Unit**	**Unit Cost**	**Item Total**	**Total**
Acquisition costs	3,900	SF	$ 55	$ 215,000	
Right of way Subtotal					**$ 220,000**
SUBTOTAL CONSTRUCTION COSTS (2019 YEAR)					**$ 2,520,000**
TOTAL RIGHT OF WAY COST					$ 220,000
TOTAL CAPITAL OUTLAY COSTS (2019 YEAR)					**$ 2,740,000**
Support Costs	**Quantity**	**Unit**	**Unit Cost**	**Item Total**	**Total**
Preliminary Eng/Envir (6%)	1	LS	$ 152,000	$ 152,000	
Final Design (15%)	1	LS	$ 378,000	$ 378,000	
Construction Administration (12%)	1	LS	$ 303,000	$ 303,000	
R/W Engineering/Acquisition (10% of ROW Costs)	1	LS	$ 22,000	$ 22,000	
Subtotal "Support Costs"					**$ 860,000**
GRAND TOTAL					**$ 3,600,000**

Phasing	**Phasing Duration**
Preliminary Eng/Envir	9-12 months
Final Design	12-15 months
ROW Acquisition	6-9 months
Construction	12-15 months
TOTAL	**33-42 months**

1. New Pavement cost includes base, subbase and roadway excavation cost for pavement section.
2. Soft cost is percentage of Roadway and Structure Items except R/W Engineering which is 10% of R/W Items.

WCCTAC - Transit Freeway Access Improvements

PLANNING COST ESTIMATE SUMMARY

Description **Project FA2**
Richmond Parkway
HOV lane to I-80

Date of Estimate: 7/31/2019

Roadway Items:	**Quantity**	**Unit**	**Unit Cost**	**Item Total**	**Total**
Clearing and Grubbing	1	LS	$ 15,000	$ 15,000	
Roadway Excavation	100	CY	$ 80	$ 8,000	
Remove concrete (Curb & Gutter, Sidewalk)	150	CY	$ 400	$ 60,000	
Pavement	1,700	SF	$ 18	$ 31,000	
Curb & Gutter	450	LF	$ 65	$ 30,000	
Remove striping	150	SF	$ 4	$ 1,000	
Roadside Sign - One Post	6	EA	$ 300	$ 2,000	
Traffic Signal	1	LS	$ 25,000	$ 25,000	
Striping	3,100	LF	$ 3	$ 8,000	
Utility Relocation	2	EA	$ 50,000	$ 100,000	
Concrete Sidewalk	1,850	SF	$ 20	$ 37,000	
WPC / Treatment / SWPPP (10%)	1	LS	$ 31,700	$ 32,000	
Roadway Additions (10%)	1	LS	$ 31,700	$ 32,000	
Mobilization (10%)	1	LS	$ 38,100	$ 39,000	
Contingency (40%)	1	LS	$ 168,000	$ 168,000	
Roadway Subtotal					**$ 590,000**
Electrical Items:					
Relocate Lighting	1	EA	$ 20,000	$ 20,000	
Mobilization (10%)	1	LS	$ 2,000	$ 2,000	
Contingency (40%)	1	LS	$ 8,000	$ 8,000	
Electrical Subtotal					**$ 30,000**
SUBTOTAL CONSTRUCTION COSTS					**$ 620,000**
TOTAL CAPITAL OUTLAY COSTS					**$ 620,000**

Support Costs	**Quantity**	**Unit**	**Unit Cost**	**Item Total**	**Total**
Preliminary Eng/Envir (6%)	1	LS	$ 38,000	$ 38,000	
Final Design (15%)	1	LS	$ 93,000	$ 93,000	
Construction Administration (12%)	1	LS	$ 75,000	$ 75,000	
Subtotal "Support Costs"					**$ 210,000**
GRAND TOTAL					**$ 900,000**

Phasing	**Phasing Duration**
Preliminary Eng/Envir	9-12 months
Final Design	9-12 months
Utility Coordination	12-15 months
Construction	9-12 months
TOTAL	**27-36 months**

1. New Pavement cost includes base, subbase and roadway excavation cost for pavement section.
2. Soft cost is percentage of Roadway and Structure Items except R/W Engineering which is 10% of R/W Items.

WCCTAC - Transit Freeway Access Improvements

PLANNING COST ESTIMATE SUMMARY

Description **Project FA3**
San Pablo Dam Rd / WB I-80 On-Ramp Transit Lane

Date of Estimate: 8/2019

Roadway Items:	**Quantity**	**Unit**	**Unit Cost**	**Item Total**	**Total**
Clearing and Grubbing	1	LS	$ 10,000	$ 10,000	
Roadway Excavation	2,200	CY	$ 80	$ 176,000	
Pavement	7,297	SF	$ 18	$ 132,000	
Curb & Gutter	221	LF	$ 65	$ 15,000	
Striping	1	LS	$ 7,000	$ 7,000	
Roadside Sign - One Post	5	EA	$ 300	$ 2,000	
Lighting	2	EA	$ 16,000	$ 32,000	
Temporary Traffic Control System/Staging	1	LS	$ 150,000	$ 150,000	
Traffic Electrical	1	LS	$ 450,000	$ 450,000	
Concrete (Sidewalk, Island, Curb Ramp)	1,211	SF	$ 15	$ 19,000	
Drainage	1	LS	$ 198,600	$ 199,000	
Removal	1	LS	$ 10,000	$ 10,000	
WPC / Treatment / SWPPP (10%)	1	LS	$ 99,300	$ 100,000	
Roadway Additions (10%)	1	LS	$ 120,200	$ 121,000	
Mobilization (10%)	1	LS	$ 142,300	$ 143,000	
Contingency (40%)	1	LS	$ 626,400	$ 627,000	
Roadway Subtotal					**$ 2,200,000**

Structure items:	**Quantity**	**Unit**	**Unit Cost**	**Item Total**	**Total**
Retaining wall	5,000	SF	$ 150	$ 750,000	
Soundwall	1,920	SF	$ 60	$ 116,000	
Mobilization (10%)	1	LS	$ 75,000	$ 75,000	
Contingency (40%)	1	LS	$ 300,000	$ 300,000	
Structure Subtotal					**$ 1,250,000**

Right of way Items:	**Quantity**	**Unit**	**Unit Cost**	**Item Total**	**Total**
Acquisition costs	150	SF	$ 85	$ 13,000	
Right of way Subtotal					**$ 20,000**

SUBTOTAL CONSTRUCTION COSTS (2019 YEAR)	**$ 3,450,000**
TOTAL RIGHT OF WAY COST	$ 20,000
TOTAL CAPITAL OUTLAY COSTS (2019 YEAR)	**$ 3,470,000**

Support Costs	**Quantity**	**Unit**	**Unit Cost**	**Item Total**	**Total**
Preliminary Eng/Envir (6%)	1	LS	$ 207,000	$ 207,000	
Final Design (15%)	1	LS	$ 518,000	$ 518,000	
Construction Administration (12%)	1	LS	$ 414,000	$ 414,000	
R/W Engineering/Acquisition (10% of ROW Costs)	1	LS	$ 2,000	$ 2,000	
Subtotal "Support Costs"					**$ 1,150,000**

GRAND TOTAL	**$ 4,600,000**

Phasing	**Phasing Duration**
Preliminary Eng/Envir	12-15 months
Final Design	12-15 months
ROW Acquisition	6-12 months
Construction	15-24 months
TOTAL	**39-54 months**

1. New Pavement cost includes base, subbase and roadway excavation cost for pavement section.
2. Soft cost is percentage of Roadway and Structure Items except R/W Engineering which is 10% of R/W Items.

WCCTAC - Transit Freeway Access Improvements

PLANNING COST ESTIMATE SUMMARY

Description **Project TL1**
I-80 Part-Time Transit Lanes

Date of Estimate: 8/2019

Roadway Items:	**Quantity**	**Unit**	**Unit Cost**	**Item Total**	**Total**
Clearing and Grubbing	1	LS	$ 50,000	$ 50,000	
Roadway Excavation	5,738	CY	$ 80	$ 460,000	
Pavement	51,644	SF	$ 18	$ 930,000	
Cold Plane and Overlay	1	LS	$ 270,000	$ 270,000	
Dike	12,911	LF	$ 5	$ 65,000	
Striping	1	LS	$ 50,000	$ 50,000	
Roadside Sign - One Post	50	EA	$ 300	$ 15,000	
Guardrail	3,475	LF	$ 60	$ 209,000	
Lighting Relocation	2	EA	$ 5,000	$ 10,000	
Temporary Traffic Control System/Staging	1	LS	$ 200,000	$ 200,000	
WPC / Treatment / SWPPP	1	LS	$ 300,000	$ 300,000	
Drainage	5	EA	$ 23,200	$ 116,000	
Roadway Additions (10%)	1	LS	$ 267,500	$ 268,000	
Mobilization (10%)	1	LS	$ 294,300	$ 295,000	
Contingency (40%)	1	LS	$ 1,295,200	$ 1,296,000	
Roadway Subtotal					**$ 4,540,000**
SUBTOTAL CONSTRUCTION COSTS (2019 YEAR)					**$ 4,540,000**
TOTAL CAPITAL OUTLAY COSTS (2019 YEAR)					**$ 4,540,000**

Support Costs	**Quantity**	**Unit**	**Unit Cost**	**Item Total**	**Total**
Preliminary Eng/Envir (6%)	1	LS	$ 273,000	$ 273,000	
Final Design (15%)	1	LS	$ 681,000	$ 681,000	
Construction Administration (12%)	1	LS	$ 545,000	$ 545,000	
Subtotal "Support Costs"					**$ 1,500,000**
GRAND TOTAL					**$ 6,000,000**

Phasing	**Phasing Duration**
Preliminary Eng/Envir	15-18 months months
Final Design	6-9 months months
ROW Acquisition	N/A
Construction	6-9 months
	TOTAL 27-36 months

1. New Pavement cost includes base, subbase and roadway excavation cost for pavement section.
2. Soft cost is percentage of Roadway and Structure Items except R/W Engineering which is 10% of R/W Items.
3. This estimate does not include ramp metering or other communication technology.

WCCTAC - Transit Freeway Access Improvements

PLANNING COST ESTIMATE SUMMARY

Description **Project MH1**
Tara Hills Mobility Hub Option 1
located southwest of Tara Hills Drive and San Pablo Avenue

Date of Estimate: 8/2019

Roadway Items:	**Quantity**	**Unit**	**Unit Cost**	**Item Total**	**Total**
Remove AC Pavement	34,800	SF	$ 2	$ 70,000	
Pavement	34,800	SF	$ 18	$ 627,000	
Striping	1,850	LF	$ 3	$ 5,000	
Chainlink Fence	750	LF	$ 40	$ 30,000	
Secure Bike Lockers (includes concrete pedestal)	2	EA	$ 5,000	$ 10,000	
Wayfinding/Signage	1	LS	$ 30,000	$ 30,000	
Security/Communications	1	LS	$ 200,000	$ 200,000	
Drainage	1	LS	$ 146,400	$ 147,000	
Roadway Additions (10%)	1	LS	$ 73,200	$ 74,000	
Mobilization (10%)	1	LS	$ 119,300	$ 120,000	
Contingency (40%)	1	LS	$ 525,200	$ 526,000	
Roadway Subtotal					**$ 1,840,000**
Electrical Items:					
Lighting	1	LS	$ 50,000	$ 50,000	
Mobilization (10%)	1	LS	$ 5,000	$ 5,000	
Contingency (40%)	1	LS	$ 20,000	$ 20,000	
Electrical Subtotal					**$ 80,000**
Electric Vehicle Charging Station (EVCS)					
Infrastructure (per space)	4	EA	$ 25,000	$ 100,000	
Utility Improvements (includes new transformer)	1	LS	$ 100,000	$ 100,000	
EVCS Subtotal					**$ 200,000**
Right of way Items:	**Quantity**	**Unit**	**Unit Cost**	**Item Total**	**Total**
Acquisition costs	34,800	SF	$ 20	$ 696,000	
Right of way Subtotal					**$ 700,000**
Total Right of Way Cost (Escalated Value)					**$ -**
SUBTOTAL CONSTRUCTION COSTS (2019 YEAR)					**$ 2,120,000**
TOTAL RIGHT OF WAY COST					$ 700,000
TOTAL CAPITAL OUTLAY COSTS (2019 YEAR)					**$ 2,820,000**
Support Costs	**Quantity**	**Unit**	**Unit Cost**	**Item Total**	**Total**
Preliminary Eng/Envir (6%)	1	LS	$ 128,000	$ 128,000	
Final Design (15%)	1	LS	$ 318,000	$ 318,000	
Construction Administration (12%)	1	LS	$ 255,000	$ 255,000	
R/W Engineering/Acquisition (10% of ROW Costs)	1	LS	$ 70,000	$ 70,000	
Subtotal "Support Costs"					**$ 780,000**
GRAND TOTAL					**$ 3,600,000**

Phasing	**Phasing Duration**
Preliminary Eng/Envir	3-6 months
Final Design	6-9 months
ROW Acquisition	3-6 months
Construction	3-6 months
TOTAL	**12-21 months**

1. New Pavement cost includes base, subbase and roadway excavation cost for pavement section.
2. Soft cost is percentage of Roadway and Structure Items except R/W Engineering which is 10% of R/W Items.
3. EVCS costs do not include coordination efforts with local utility agency and are not reflective of all costs associated with EVCS installation and use.
   Infrastructure and utility improvements to be verified with utility agency

WCCTAC - Transit Freeway Access Improvements

PLANNING COST ESTIMATE SUMMARY

Description **Project MH2**
Tara Hills Mobility Hub Option 2
located northeast of Tara Hills Drive and San Pablo Avenue

Date of Estimate: 8/2019

Roadway Items:	**Quantity**	**Unit**	**Unit Cost**	**Item Total**	**Total**
Clearing and Grubbing	1	LS	$ 50,000	$ 50,000	
Earthwork Excavation	8,600	CY	$ 85	$ 731,000	
Pavement	115,900	SF	$ 18	$ 2,087,000	
Curb & Gutter	750	LF	$ 65	$ 49,000	
Striping	6,650	LF	$ 3	$ 17,000	
Concrete (Sidewalk, Curb Ramp)	4,700	SF	$ 15	$ 71,000	
Remove Concrete (Curb & Gutter, Sidewalk)	300	CY	$ 400	$ 120,000	
Wayfinding/Signage	1	LS	$ 30,000	$ 30,000	
Security/Communications	1	LS	$ 200,000	$ 200,000	
Chainlink Fence	1,000	LF	$ 40	$ 40,000	
Secure Bike Lockers (includes concrete pedestal)	6	EA	$ 5,000	$ 30,000	
Drainage	1	LS	$ 679,000	$ 679,000	
WPC / Treatment / SWPPP (10%)	1	LS	$ 339,500	$ 340,000	
Roadway Additions (10%)	1	LS	$ 339,500	$ 340,000	
Mobilization (10%)	1	LS	$ 478,400	$ 479,000	
Contingency (40%)	1	LS	$ 2,105,200	$ 2,106,000	
Roadway Subtotal					**$ 7,370,000**
Electrical Items:					
Lighting	1	LS	$ 200,000	$ 200,000	
Mobilization (10%)	1	LS	$ 20,000	$ 20,000	
Contingency (40%)	1	LS	$ 80,000	$ 80,000	
Electrical Subtotal					**$ 300,000**
Electric Vehicle Charging Station (EVCS)					
Infrastructure (per space)	13	EA	$ 25,000	$ 325,000	
Utility Improvements (includes new transformer)	1	LS	$ 100,000	$ 100,000	
EVCS Subtotal					**$ 425,000**
Right of way Items:	**Quantity**	**Unit**	**Unit Cost**	**Item Total**	**Total**
Acquisition costs	115,900	SF	$ 20	$ 2,318,000	
Right of way Subtotal					**$ 2,320,000**
Total Right of Way Cost (Escalated Value)					**$ -**
SUBTOTAL CONSTRUCTION COSTS (2019 YEAR)					**$ 8,100,000**
TOTAL RIGHT OF WAY COST					$ 2,320,000
TOTAL CAPITAL OUTLAY COSTS (2019 YEAR)					**$ 10,420,000**
Support Costs	**Quantity**	**Unit**	**Unit Cost**	**Item Total**	**Total**
Preliminary Eng/Envir (6%)	1	LS	$ 486,000	$ 486,000	
Final Design (15%)	1	LS	$ 1,215,000	$ 1,215,000	
Construction Administration (12%)	1	LS	$ 972,000	$ 972,000	
R/W Engineering/Acquisition (10% of ROW Costs)	1	LS	$ 232,000	$ 232,000	
Subtotal "Support Costs"					**$ 2,910,000**
GRAND TOTAL					**$ 13,300,000**

Phasing	**Phasing Duration**
Preliminary Eng/Envir	12-15 months
Final Design	6-9 months
ROW Acquisition	6-9 months
Construction	6-9 months
TOTAL	**24-33 months**

1. New Pavement cost includes base, subbase and roadway excavation cost for pavement section.
2. Soft cost is percentage of Roadway and Structure Items except R/W Engineering which is 10% of R/W Items.
3. EVCS costs do not include coordination efforts with local utility agency and are not reflective of all costs associated with EVCS installation and use.
   Infrastructure and utility improvements to be verified with utility agency

WCCTAC - Transit Freeway Access Improvements

PLANNING COST ESTIMATE SUMMARY

Description **Project MH3**
San Pablo Dam Rd Mobility Hub

Date of Estimate: 8/2019

Roadway Items:	**Quantity**	**Unit**	**Unit Cost**	**Item Total**	**Total**
Clearing and Grubbing	1	LS	$ 10,000	$ 10,000	
Roadway Excavation	7,500	CY	$ 80	$ 600,000	
Pavement	67,000	SF	$ 18	$ 1,206,000	
Curb & Gutter	600	LF	$ 65	$ 39,000	
Secure Bike Lockers (includes concrete pedestal)	8	EA	$ 5,000	$ 40,000	
Striping	460	LF	$ 3	$ 2,000	
Wayfinding/Signage	1	LS	$ 30,000	$ 30,000	
Security/Communications	1	LS	$ 200,000	$ 200,000	
Lighting	23	EA	$ 16,000	$ 368,000	
Temporary Traffic Control System/Staging	1	LS	$ 150,000	$ 150,000	
Traffic Electrical	1	LS	$ 500,000	$ 500,000	
Chain Link Fence	1,500	LF	$ 40	$ 60,000	
Concrete (Sidewalk, Island, Curb Ramp)	1,875	SF	$ 15	$ 29,000	
Drainage	1	LS	$ 646,800	$ 647,000	
Removal	1	LS	$ 10,000	$ 10,000	
WPC / Treatment / SWPPP (10%)	1	LS	$ 323,400	$ 324,000	
Roadway Additions (10%)	1	LS	$ 389,100	$ 390,000	
Mobilization (10%)	1	LS	$ 460,500	$ 461,000	
Contingency (40%)	1	LS	$ 2,026,400	$ 2,027,000	
Roadway Subtotal					**$ 7,100,000**
Electric Vehicle Charging Station (EVCS)					
Infrastructure (per space)	10	EA	$ 25,000	$ 250,000	
Utility Improvements (includes new transformer)	1	LS	$ 100,000	$ 100,000	
EVCS Subtotal					**$ 350,000**
SUBTOTAL CONSTRUCTION COSTS (2019 YEAR)					**$ 7,450,000**
TOTAL CAPITAL OUTLAY COSTS (2019 YEAR)					**$ 7,450,000**

Support Costs	**Quantity**	**Unit**	**Unit Cost**	**Item Total**	**Total**
Preliminary Eng/Envir (6%)	1	LS	$ 447,000	$ 447,000	
Final Design (15%)	1	LS	$ 1,118,000	$ 1,118,000	
Construction Administration (12%)	1	LS	$ 894,000	$ 894,000	
Subtotal "Support Costs"					**$ 2,460,000**
GRAND TOTAL					**$ 9,900,000**

Phasing	**Phasing Duration**
Preliminary Eng/Envir	12-15 months
Final Design	9-12 months
ROW Acquisition	9-12 months
Construction	12-15 months
TOTAL	**33-42 months**

1. New Pavement cost includes base, subbase and roadway excavation cost for pavement section.
2. Soft cost is percentage of Roadway and Structure Items except R/W Engineering which is 10% of R/W Items.
3. EVCS costs do not include coordination efforts with local utility agency and are not reflective of all costs associated with EVCS installation and use.
   Infrastructure and utility improvements to be verified with utility agency

WCCTAC - Transit Freeway Access Improvements

PLANNING COST ESTIMATE SUMMARY

Description **Project MH4**
Bissell Avenue (Richmond East) Mobility Hub
at Bissell Avenue and 39th Street

Date of Estimate: 8/2019

Roadway Items:	**Quantity**	**Unit**	**Unit Cost**	**Item Total**	**Total**
Clearing and Grubbing	1	LS	$ 10,000	$ 10,000	
Remove AC Pavement	39,900	SF	$ 2	$ 80,000	
Pavement	39,900	SF	$ 18	$ 719,000	
Secure Bike Lockers (includes concrete pedestal)	6	EA	$ 5,000	$ 30,000	
Curb & Gutter	100	LF	$ 65	$ 7,000	
Striping	2,950	LF	$ 3	$ 8,000	
Remove striping	1,500	SF	$ 4	$ 6,000	
Wayfinding/Signage	1	LS	$ 30,000	$ 30,000	
Security/Communications	1	LS	$ 200,000	$ 200,000	
Concrete (Sidewalk, Island, Curb Ramp)	2,800	SF	$ 20	$ 56,000	
Remove concrete (Curb & Gutter, Sidewalk)	100	CY	$ 400	$ 40,000	
WPC / Treatment / SWPPP (10%)	1	LS	$ 118,600	$ 119,000	
Roadway Additions (10%)	1	LS	$ 118,600	$ 119,000	
Mobilization (10%)	1	LS	$ 142,400	$ 143,000	
Contingency (40%)	1	LS	$ 626,800	$ 627,000	
Roadway Subtotal					**$ 2,200,000**
Electrical Items:					
Light Pole and Foundation	1	EA	$ 12,500	$ 12,500	
Mobilization (10%)	1	LS	$ 2,000	$ 2,000	
Contingency (40%)	1	LS	$ 5,000	$ 5,000	
Electrical Subtotal					**$ 19,500**
Electric Vehicle Charging Station (EVCS)					
Infrastructure (per space)	7	EA	$ 25,000	$ 175,000	
Utility Improvements (includes new transformer)	1	LS	$ 100,000	$ 100,000	
EVCS Subtotal					**$ 275,000**
SUBTOTAL CONSTRUCTION COSTS 2019 YEAR)					**$ 2,500,000**
TOTAL CAPITAL OUTLAY COSTS (2019 YEAR)					**$ 2,500,000**

Support Costs	**Quantity**	**Unit**	**Unit Cost**	**Item Total**	**Total**
Preliminary Eng/Envir (6%)	1	LS	$ 150,000	$ 150,000	
Final Design (15%)	1	LS	$ 375,000	$ 375,000	
Construction Administration (12%)	1	LS	$ 300,000	$ 300,000	
Subtotal "Support Costs"					**$ 830,000**
GRAND TOTAL					**$ 3,300,000**

Phasing	**Phasing Duration**
Preliminary Eng/Envir	3-6 months
Final Design	6-9 months
ROW Acquisition	3-6 months
Construction	3-6 months
TOTAL	**12-21 months**

1. New Pavement cost includes base, subbase and roadway excavation cost for pavement section.
2. Soft cost is percentage of Roadway and Structure Items except R/W Engineering which is 10% of R/W Items.
3. R/W costs are not included in this estimate. Assumed County will release property at no cost. Further coordination required.
4. EVCS costs do not include coordination efforts with local utility agency and are not reflective of all costs associated with EVCS installation and use.
   Infrastructure and utility improvements to be verified with utility agency

WCCTAC - Transit Freeway Access Improvements

PLANNING COST ESTIMATE SUMMARY

Description **Project MH5**
Wright Avenue (Richmond West) Mobility Hub
located on Wright Avenue east of Marina Way South

Date of Estimate: 8/2019

Roadway Items:	**Quantity**	**Unit**	**Unit Cost**	**Item Total**	**Total**
Clearing and Grubbing	1	LS	$ 50,000	$ 50,000	
Earthwork Excavation	8,500	CY	$ 85	$ 723,000	
Pavement	114,700	SF	$ 18	$ 2,065,000	
Curb & Gutter	1,650	LF	$ 65	$ 108,000	
Striping	7,950	LF	$ 3	$ 20,000	
Concrete (Sidewalk, Curb Ramp)	14,400	SF	$ 15	$ 216,000	
Remove Concrete (Curb & Gutter, Sidewalk)	300	CY	$ 400	$ 120,000	
Roadside Sign - One Post	4	EA	$ 300	$ 2,000	
Chainlink Fence	1,850	LF	$ 40	$ 74,000	
Secure Bike Lockers (includes concrete pedestal)	6	EA	$ 5,000	$ 30,000	
Wayfinding/Signage	1	LS	$ 30,000	$ 30,000	
Security/Communications	1	LS	$ 200,000	$ 200,000	
Drainage	1	LS	$ 337,800	$ 338,000	
WPC / Treatment / SWPPP (10%)	1	LS	$ 337,800	$ 338,000	
Roadway Additions (10%)	1	LS	$ 337,800	$ 338,000	
Mobilization (10%)	1	LS	$ 465,200	$ 466,000	
Contingency (40%)	1	LS	$ 2,047,200	$ 2,048,000	
Roadway Subtotal					**$ 7,170,000**
Electrical Items:					
Lighting	1	EA	$ 200,000	$ 200,000	
Mobilization (10%)	1	LS	$ 20,000	$ 20,000	
Contingency (40%)	1	LS	$ 80,000	$ 80,000	
Electrical Subtotal					**$ 300,000**
Electric Vehicle Charging Station (EVCS)					
Infrastructure (per space)	14	EA	$ 25,000	$ 350,000	
Utility Improvements (includes new transformer)	1	LS	$ 100,000	$ 100,000	
EVCS Subtotal					**$ 450,000**
Structure items:	**Quantity**	**Unit**	**Unit Cost**	**Item Total**	**Total**
Retaining wall	9,400	SF	$ 120	$ 1,128,000	
Mobilization (10%)	1	LS	$ 113,000	$ 113,000	
Contingency (40%)	1	LS	$ 452,000	$ 452,000	
Structure Subtotal					**$ 1,700,000**
SUBTOTAL CONSTRUCTION COSTS (2019 YEAR)					**$ 9,620,000**
TOTAL CAPITAL OUTLAY COSTS (2019 YEAR)					**$ 9,620,000**
Support Costs	**Quantity**	**Unit**	**Unit Cost**	**Item Total**	**Total**
Preliminary Eng/Envir (6%)	1	LS	$ 578,000	$ 578,000	
Final Design (15%)	1	LS	$ 1,443,000	$ 1,443,000	
Construction Administration (12%)	1	LS	$ 1,155,000	$ 1,155,000	
Subtotal "Support Costs"					**$ 3,180,000**
GRAND TOTAL					**$ 12,800,000**

Phasing	**Phasing Duration**
Preliminary Eng/Envir	12-15 months
Final Design	9-12 months
ROW Acquisition	6-9 months
Construction	9-12 months
TOTAL	**30-39 months**

1. New Pavement cost includes base, subbase and roadway excavation cost for pavement section.
2. Soft cost is percentage of Roadway and Structure Items except R/W Engineering which is 10% of R/W Items.
3. EVCS costs do not include coordination efforts with local utility agency and are not reflective of all costs associated with EVCS installation and use. Infrastructure and utility improvements to be verified with utility agency

MATCH LINE - SEE NEXT SHEET

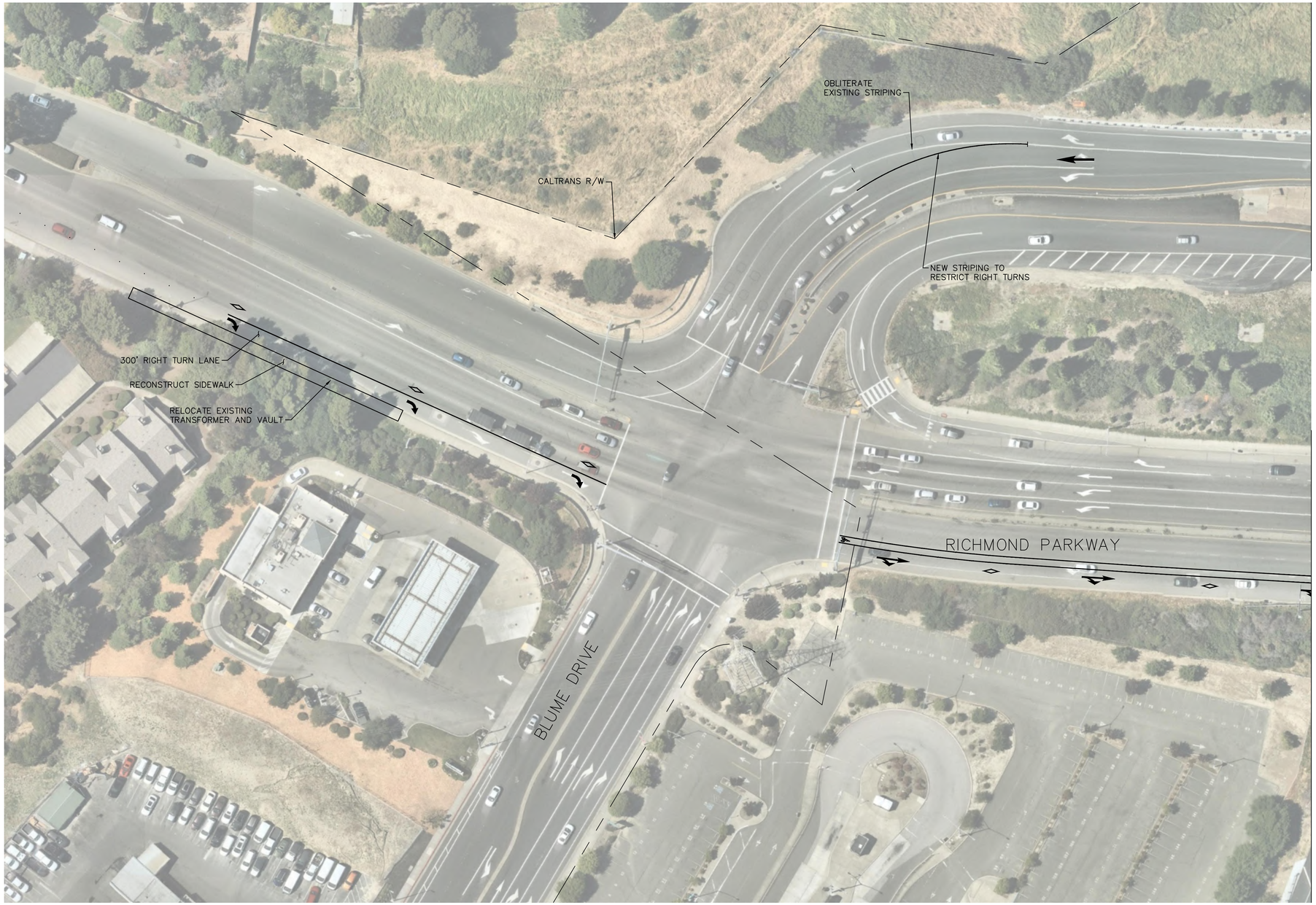
GRAPHIC SCALE IN FEET
0 20 40 80

WCCTAC EXPRESS BUS IMPLEMENTATION PLAN
HERCULES RIGHT TURN HOV LANE - PROJECT FA1
JANUARY 2020

MATCH LINE - SEE PREVIOUS SHEET

GRAPHIC SCALE IN FEET
0 20 40 80

WCCTAC EXPRESS BUS IMPLEMENTATION PLAN
HERCULES RIGHT TURN HOV LANE - PROJECT FA1
JANUARY 2020



MATCH LINE - SEE NEXT SHEET

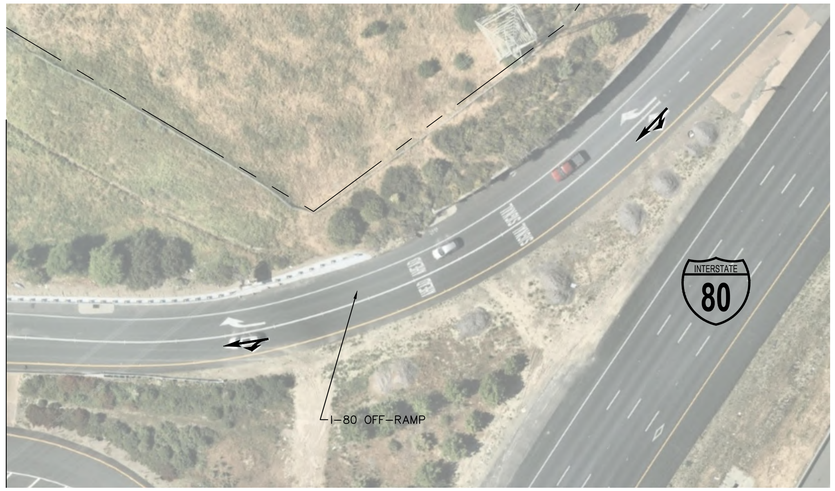
MATCH LINE - SEE NEXT SHEET

GRAPHIC SCALE IN FEET
0 20 40 80

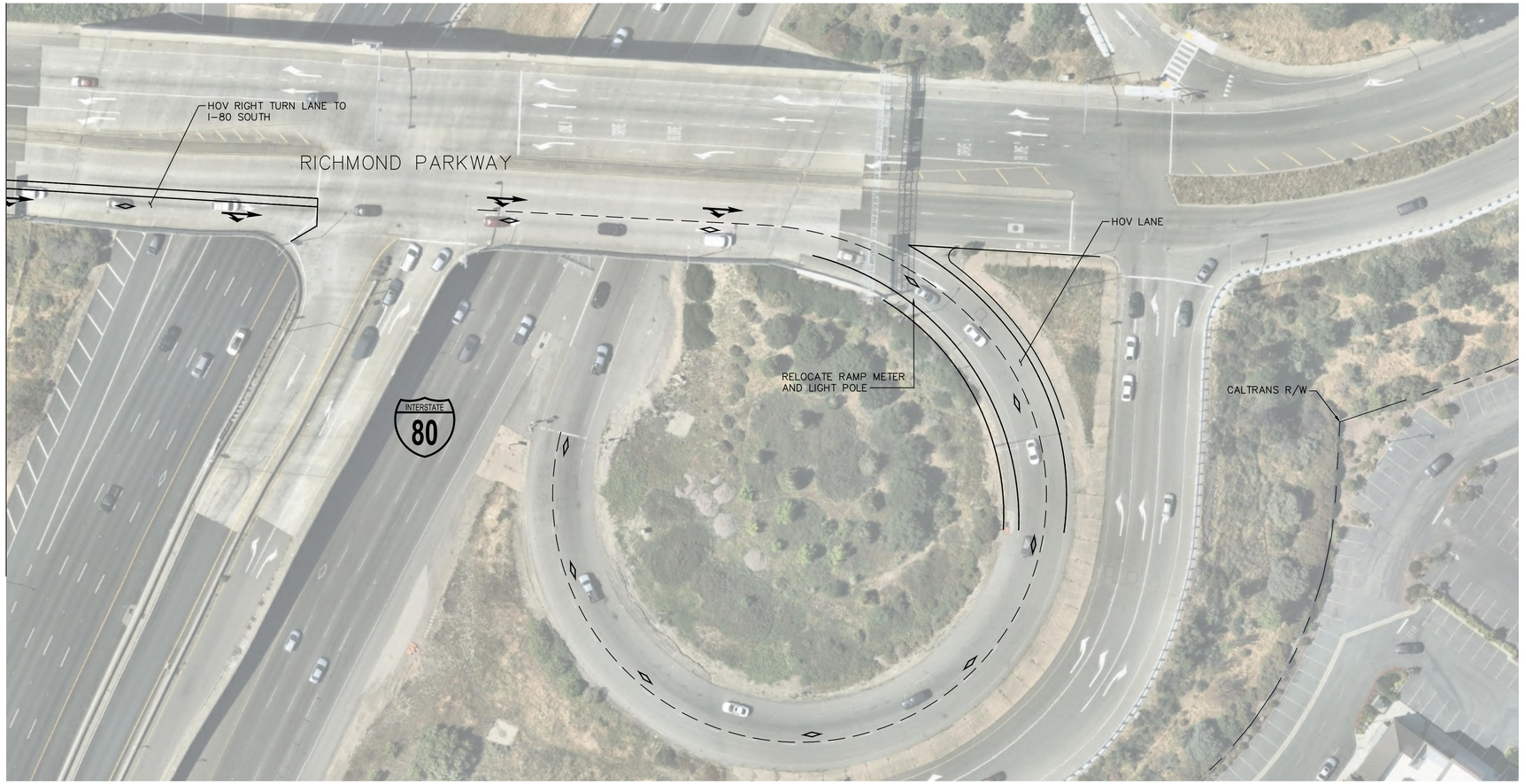
WCCTAC EXPRESS BUS IMPLEMENTATION PLAN
RICHMOND PARKWAY FREEWAY ACCESS - PROJECT FA2
JANUARY 2020

Kimley»Horn ©2014

MATCH LINE - SEE PREVIOUS SHEET



MATCH LINE - SEE PREVIOUS SHEET

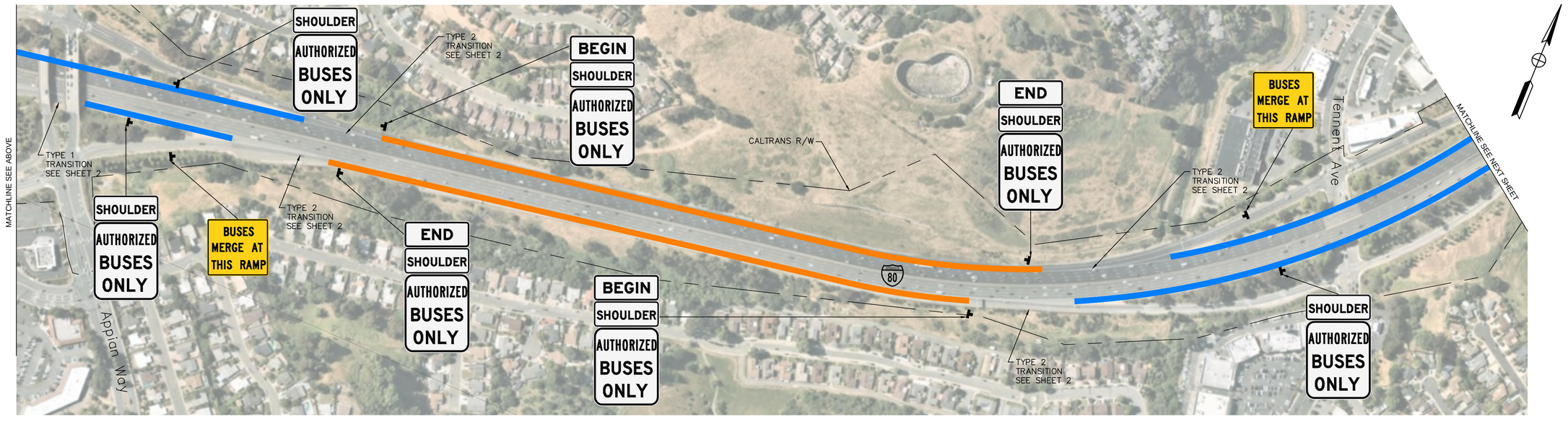


GRAPHIC SCALE IN FEET
0 20 40 80

WCCTAC EXPRESS BUS IMPLEMENTATION PLAN
RICHMOND PARKWAY FREEWAY ACCESS - PROJECT FA2
JANUARY 2020

GRAPHIC SCALE IN FEET
0 20 40 80

WWCTAC EXPRESS BUS IMPLEMENTATION PLAN
SAN PABLO DAM ROAD FREEWAY ACCESS - PROJECT FA3
JANUARY 2020



WWCTAC EXPRESS BUS IMPLEMENTATION PLAN
1-80 BUS ON SHOULDER - PROJECT TL1
JANUARY 2020

NOTE:

1. EXISTING 10' SHOULDER MAY NEED TO BE WIDENED WITHIN LIMITS OF BUS ON SHOULDER OPERATION.
2. POTENTIAL RESTRIPING AND LANE WIDTH REDUCTION ON BRIDGE STRUCTURE TO BE REQUIRED.

LEGEND:

BUS USES AUXILIARY LANE

BUS ON SHOULDER

GRAPHIC SCALE IN FEET
0 100 200 400

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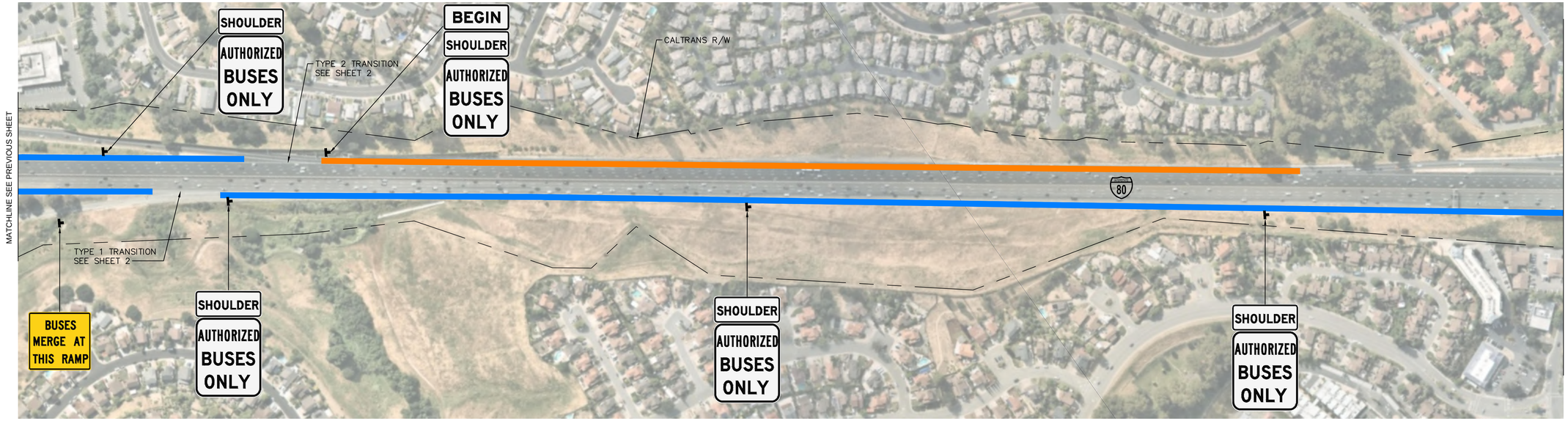
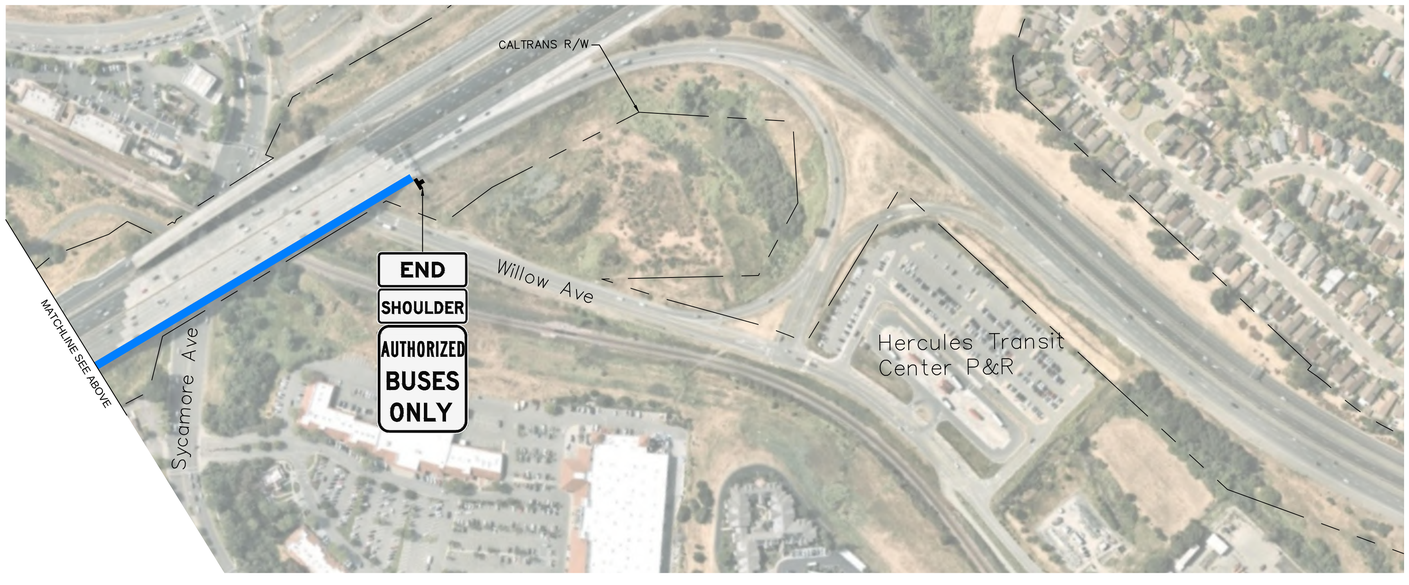


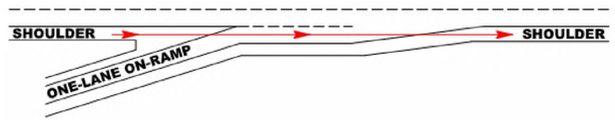
NOTE:

1. EXISTING 10' SHOULDER MAY NEED TO BE WIDENED WITHIN LIMITS OF BUS ON SHOULDER OPERATION.
2. POTENTIAL RESTRIPING AND LANE WIDTH REDUCTION ON BRIDGE STRUCTURES TO BE REQUIRED.

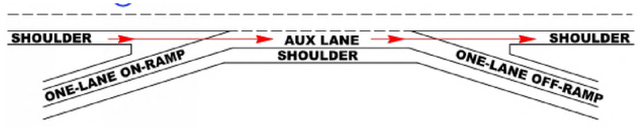


TYPICAL TRANSITION DETAILS AT ON/OFF-RAMP

TYPE 1: SHOULDER TO ON-RAMP TO SHOULDER



TYPE 2:SHOULDER TO AUXILIARY LANE / AUXILIARY LANE TO SHOULDER



LEGEND:

BUS USES AUXILIARY LANE

BUS ON SHOULDER

GRAPHIC SCALE IN FEET
0 100 200 400

WCCTAC EXPRESS BUS IMPLEMENTATION PLAN
1-80 BUS ON SHOULDER - PROJECT TL1
JANUARY 2020

PARKING CAPACITY MAY CHANGE DUE TO ADDITIONAL SPACE REQUIRED FOR BIKE PARKING, STORMWATER MANAGEMENT, AND PEDESTRIAN TREATMENTS.

GRAPHIC SCALE IN FEET
0 20 40 80

WWCTAC EXPRESS BUS IMPLEMENTATION PLAN
TARA HILLS DRIVE MOBILITY HUB OPTION 1 - PROJECT MH1
JANUARY 2020

GRAPHIC SCALE IN FEET
0 20 40 80

WWCTAC EXPRESS BUS IMPLEMENTATION PLAN
TARA HILLS DRIVE MOBILITY HUB OPTION 2 - PROJECT MH2
JANUARY 2020

PARKING CAPACITY MAY CHANGE DUE TO ADDITIONAL SPACE REQUIRED FOR BIKE PARKING, STORMWATER MANAGEMENT, AND PEDESTRIAN TREATMENTS.

PARKING CAPACITY MAY CHANGE DUE TO ADDITIONAL SPACE REQUIRED FOR BIKE PARKING, STORMWATER MANAGEMENT, AND PEDESTRIAN TREATMENTS.

GRAPHIC SCALE IN FEET
0 20 40 80

WWCTAC EXPRESS BUS IMPLEMENTATION PLAN
SAN PABLO DAM ROAD MOBILITY HUB - PROJECT MH3
JANUARY 2020

Kimley»Horn

PARKING CAPACITY MAY CHANGE DUE TO ADDITIONAL SPACE REQUIRED FOR BIKE PARKING, STORMWATER MANAGEMENT, AND PEDESTRIAN TREATMENTS.

GRAPHIC SCALE IN FEET
0 20 40 80

WCCTAC EXPRESS BUS IMPLEMENTATION PLAN
BISSELL AVENUE MOBILITY HUB - PROJECT MH4
JANUARY 2020

PARKING CAPACITY MAY CHANGE DUE TO ADDITIONAL SPACE REQUIRED FOR BIKE PARKING, STORMWATER MANAGEMENT, AND PEDESTRIAN TREATMENTS.

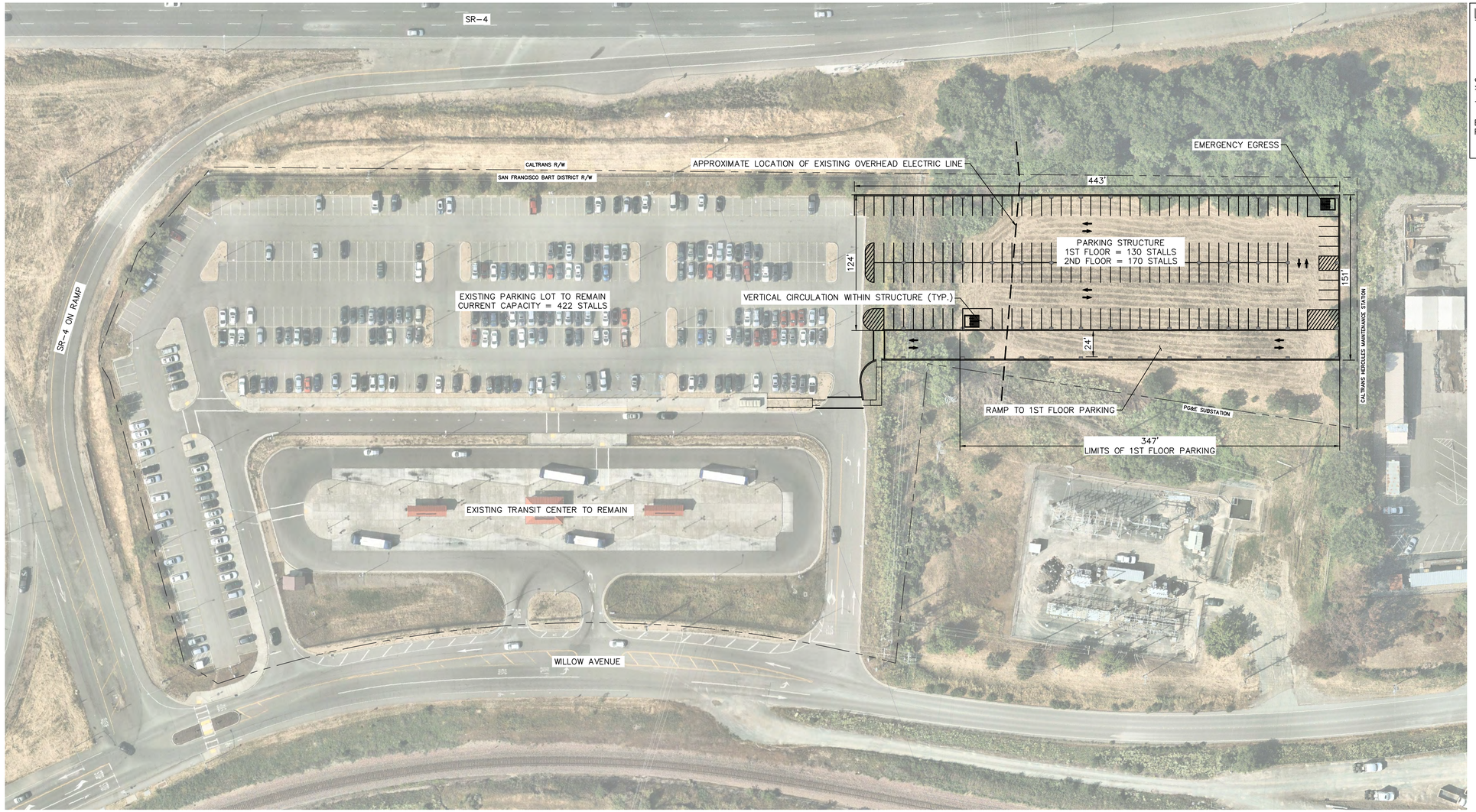
GRAPHIC SCALE IN FEET
0 20 40 80

WCCTAC EXPRESS BUS IMPLEMENTATION PLAN
WRIGHT AVENUE MOBILITY HUB - PROJECT MH5
JANUARY 2020

PARKING CAPACITY MAY CHANGE DUE TO ADDITIONAL SPACE REQUIRED FOR BIKE PARKING, STORMWATER MANAGEMENT, AND PEDESTRIAN TREATMENTS.

GRAPHIC SCALE IN FEET
0 20 40 80

WCCTAC EXPRESS BUS IMPLEMENTATION PLAN
WRIGHT AVENUE MOBILITY HUB - PROJECT MH5
JANUARY 2020



LEGEND:

- APPROXIMATE PROPERTY LINE
- OVERHEAD ELECTRIC LINE CONFLICT

SUMMARY OF PARKING:

TARGET STALLS	700
EXISTING STALLS TO REMAIN	422
PROPOSED PARKING STRUCTURE STALLS	300
TOTAL	722

NOTE:
PARKING CAPACITY MAY CHANGE DUE TO ADDITIONAL SPACE REQUIRED FOR BIKE PARKING, STORM WATER MANAGEMENT, AND PEDESTRIAN TREATMENTS.

N

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft.

10/15/2019 - Rev 2

Kimley»Horn

WCCTAC EXPRESS BUS IMPLEMENTATION
HERCULES TRANSIT CENTER
PROJECT TC1

WCCTAC

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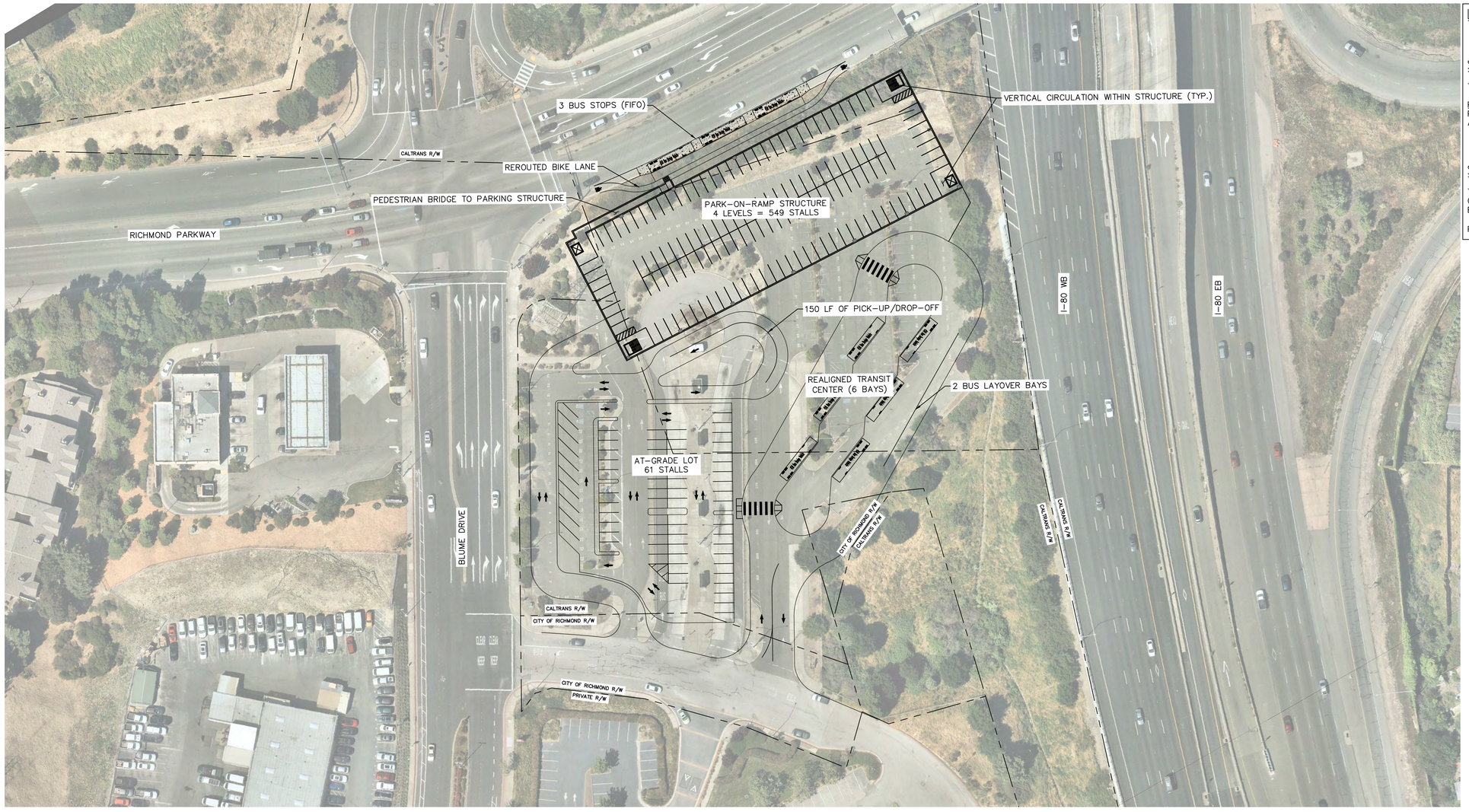

LEGEND:

APPROXIMATE PROPERTY LINE

SUMMARY OF PARKING:

TARGET STALLS	600
PROPOSED	
PARKING STRUCTURE STALLS	549
AT-GRADE STALLS	61
TOTAL	610

SUMMARY OF TRANSIT:

TRANSIT CENTER BUS BAYS	6
CURBSIDE BUS BAYS	3
BUS LAYOVER BAYS	2
PICK-UP/DROP-OFF (LF)	150

NOTE:
PARKING CAPACITY MAY CHANGE DUE TO ADDITIONAL SPACE REQUIRED FOR BIKE PARKING, STORM WATER MANAGEMENT, AND PEDESTRIAN TREATMENTS.

N

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft.

10/15/2019 - Rev 2

Kimley»Horn

WCCTAC EXPRESS BUS IMPLEMENTATION
RICHMOND PARKWAY TRANSIT CENTER
PROJECT TC2

WCCTAC

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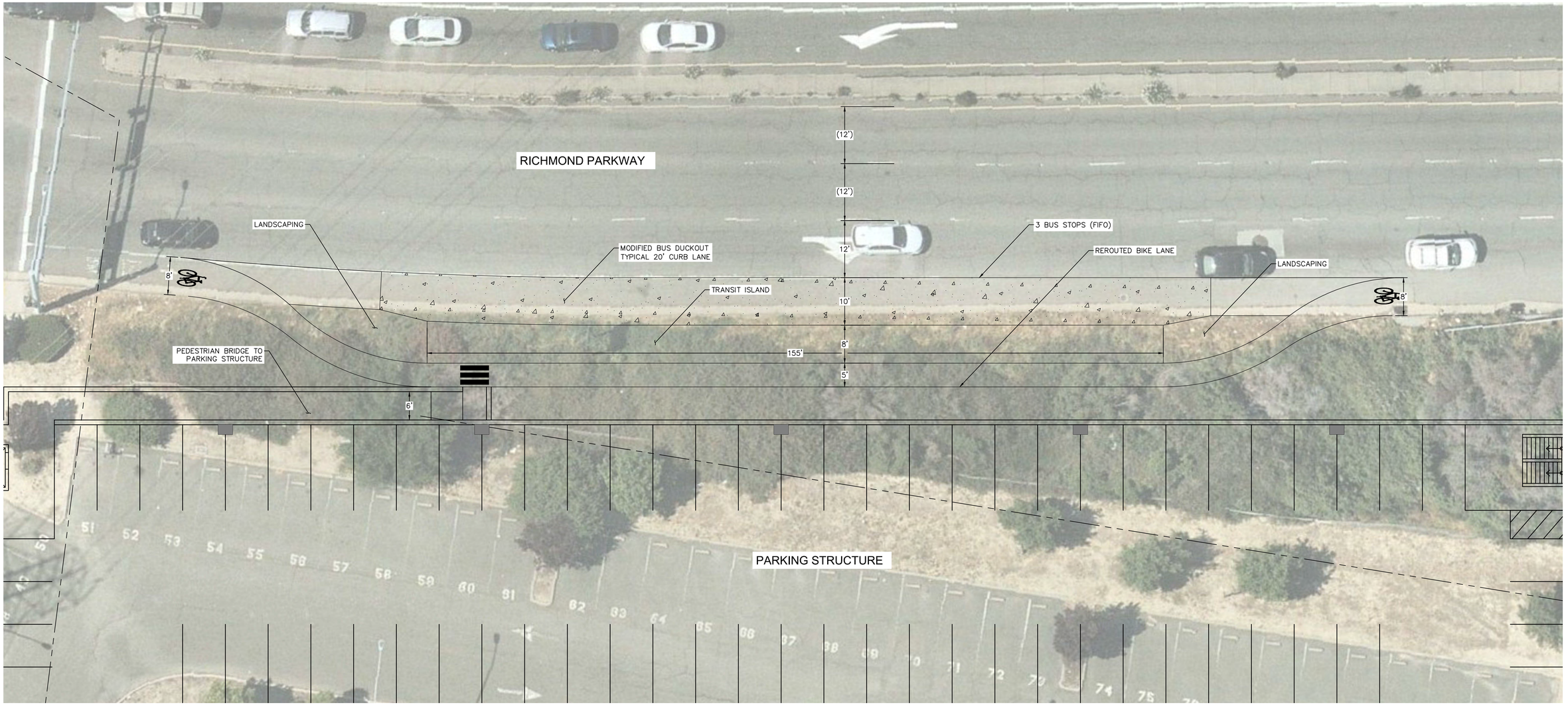

N

GRAPHIC SCALE

10 0 5 10 20

(IN FEET)
1 inch = 10 ft.

Kimley»Horn

WCCTAC EXPRESS BUS IMPLEMENTATION
RICHMOND PARKWAY TRANSIT CENTER
RICHMOND PKWY BUS STOP DETAIL

WCCTAC

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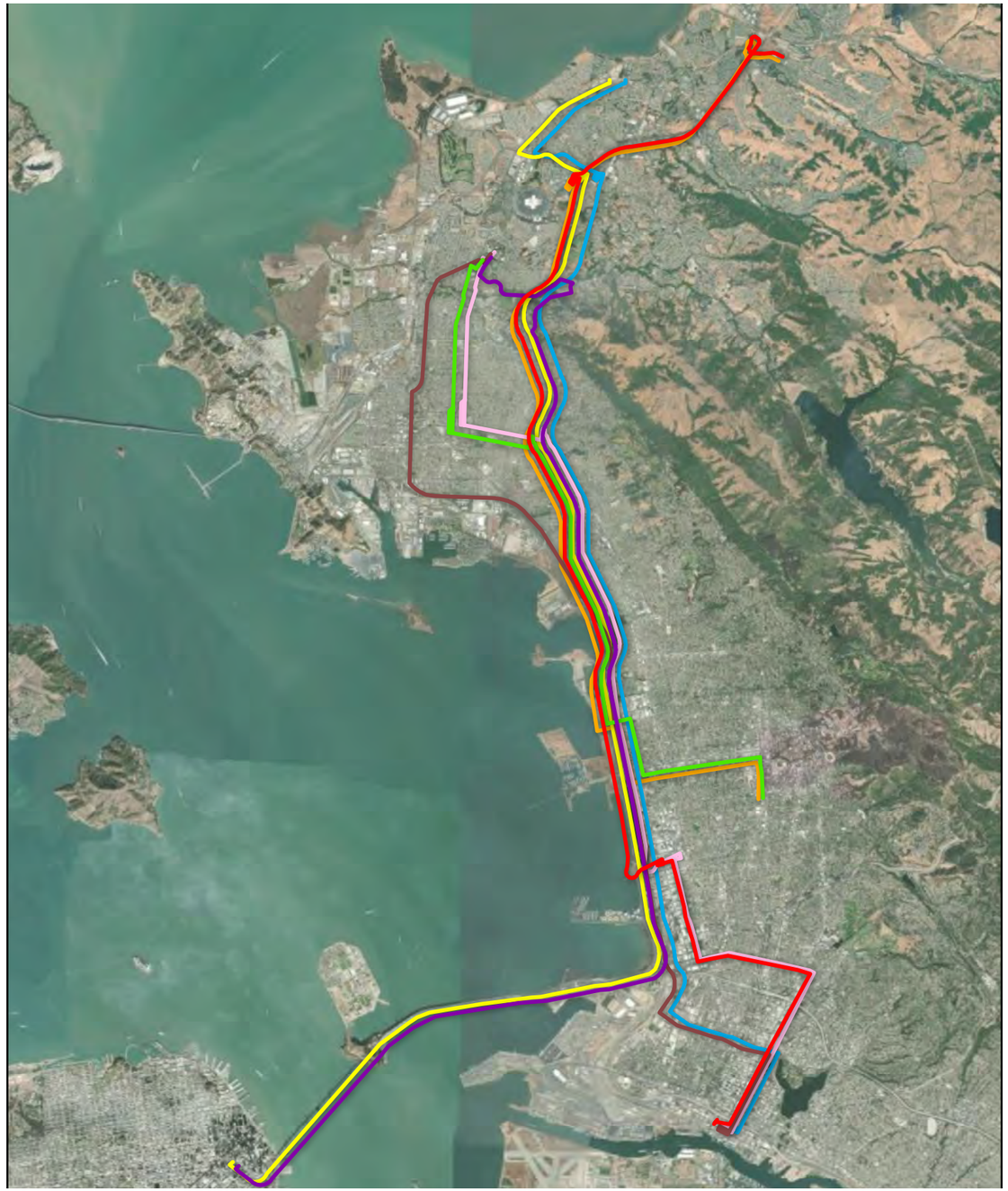
F.

BICYCLE/PEDESTRIAN GAPS ANALYSIS



F. BICYCLE/PEDESTRIAN GAPS ANALYSIS

Existing pedestrian and bicycle facilities within 0.25 miles of all proposed stops were analyzed to determine whether there were infrastructure gaps that would prevent easy and safe access by foot for by bicycle. To address all existing gaps recommendations were made that either prioritize already-planned improvements or suggest improvements not already planned.

Pedestrian Access Gaps and Proposed Improvements

Every transit user begins and end her trip as a pedestrian. For this reason, it is particularly important to ensure that transit users are not met with unnecessary challenges when traveling between home or work and their bus stop. Common barriers to pedestrian travel fall roughly into two groups: (1) gaps in the sidewalk network and (2) challenges to crossing streets.

Sidewalk network gaps can include discontinuities in the sidewalk, missing curb ramps, concrete damaged by lack of maintenance or tree roots, or physical infrastructure (such as signposts or utility poles) obstructing the path of travel. Street crossing gaps can include unsignalized crosswalks across more than two lanes of traffic, auto slip lanes, and long distances between signalized crossings. Graphics of all identified pedestrian access gaps are included in this appendix.

Hercules

- Several roadway segments on San Pablo Avenue or near it lack a sidewalk on one or both sides of the street, specifically near Hercules Transit Center.

Pinole

- Several roadway segments on San Pablo Avenue or near it lack a sidewalk on one or both sides of the street.
- The segment of San Pablo Avenue that passes through Pinole has a number of unprotected crosswalks, requiring pedestrians to cross an 80', four-lane roadway.

Unincorporated Contra Costa County

- Several roadway segments on San Pablo Avenue or near it lack a sidewalk on one or both sides of the street.

San Pablo

- Many of the intersections of major streets within the bus stop walksheds (e.g. Broadway, San Pablo Avenue, Rumrill Boulevard, Brookside Drive) feature right-turn slip lanes.
- A number of the intersections between 23rd Street and cross streets south of Market Avenue feature unprotected crosswalks, requiring pedestrians to cross a 64', four-lane roadway.

Richmond

- Numerous sidewalks in Richmond lack curb ramps at intersection, hindering the ability of wheelchair users or other mobility-impaired individuals to travel between home and bus stops
- Macdonald Avenue, 23rd Street, and Barrett Avenue all have many striped but unprotected crosswalks across wide expanses of roadway (four lanes in the case of Macdonald Avenue and 23rd Street, and three lanes in the case of Barrett Avenue)

Berkeley

- There are a number of striped but unprotected crosswalks across wide arterials in the bus stop walkshed on University Avenue, Martin Luther King Way, and Shattuck Avenue.

Emeryville

- Several streets within the bus stop walkshed lack sidewalks, forcing pedestrians to either walk in the roadway or cross the street.

Oakland

- There are a number of striped but unprotected crosswalks across wide arterials in the service walkshed on San Pablo Avenue, Telegraph Avenue, and Piedmont Avenue.
- Several right-turn slip lanes exist between surface street and I-880 ramps, presenting an impediment to pedestrian safety.

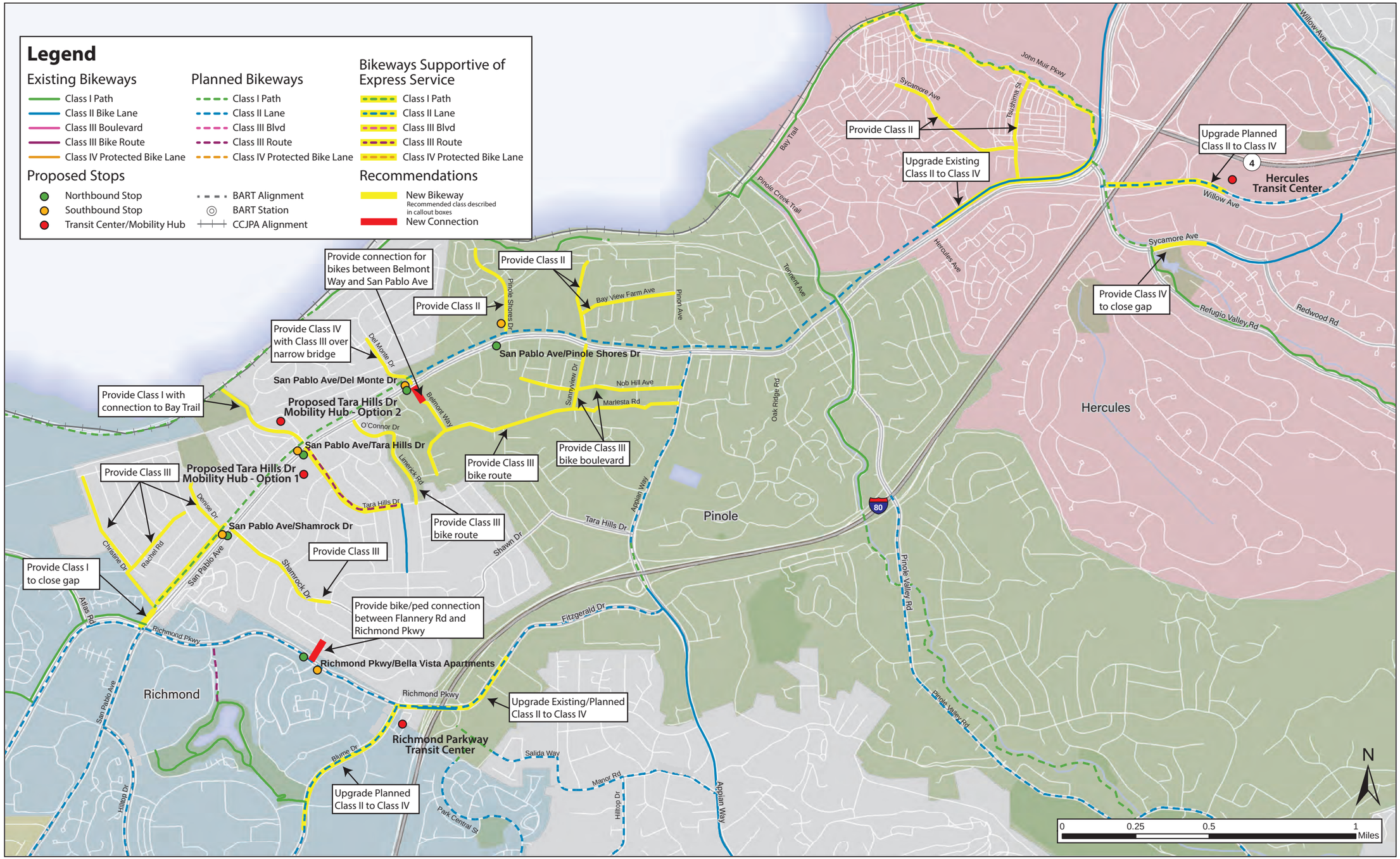
Bicycle Access Gaps and Proposed Improvements

Bicycles can be a crucial part of first/last mile connections between home or work and a transit connection. By using a bicycle, riders who do not have a bus stop directly outside their home or office can turn what would have been a 20-minute walk into a 5-minute bike ride, making a transit and bike ride competitive with driving a car.

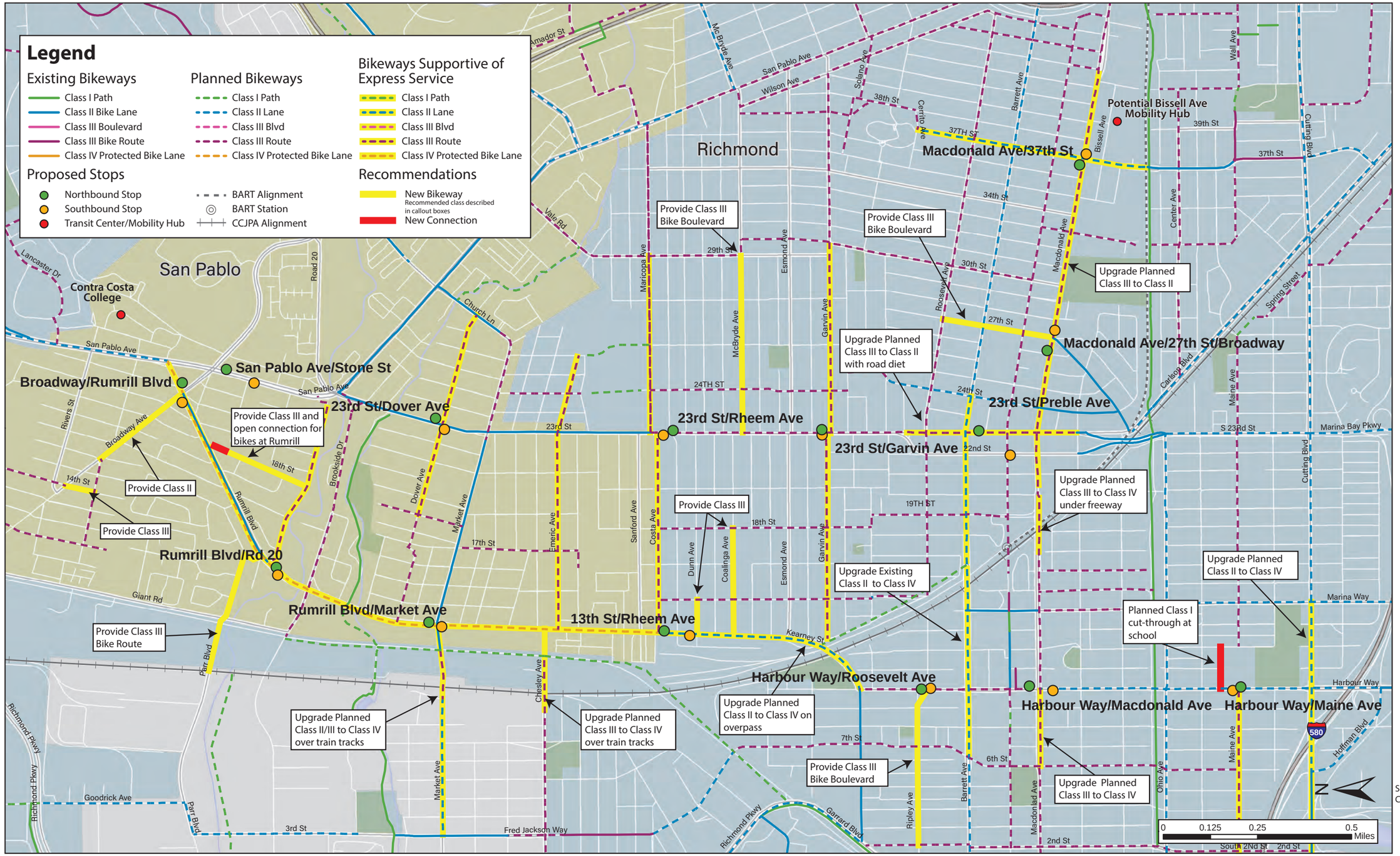
However, much of the time there is insufficient bicycle infrastructure to assure potential riders of their safety during that short trip. At best, riders must travel adjacent to fast-moving traffic with only a lane delineated by paint. At worst, riders are expected to travel in mixed traveling, contending directly with drivers for space on the roadway. In situations like this, only the most confident riders will opt to travel by bicycle.

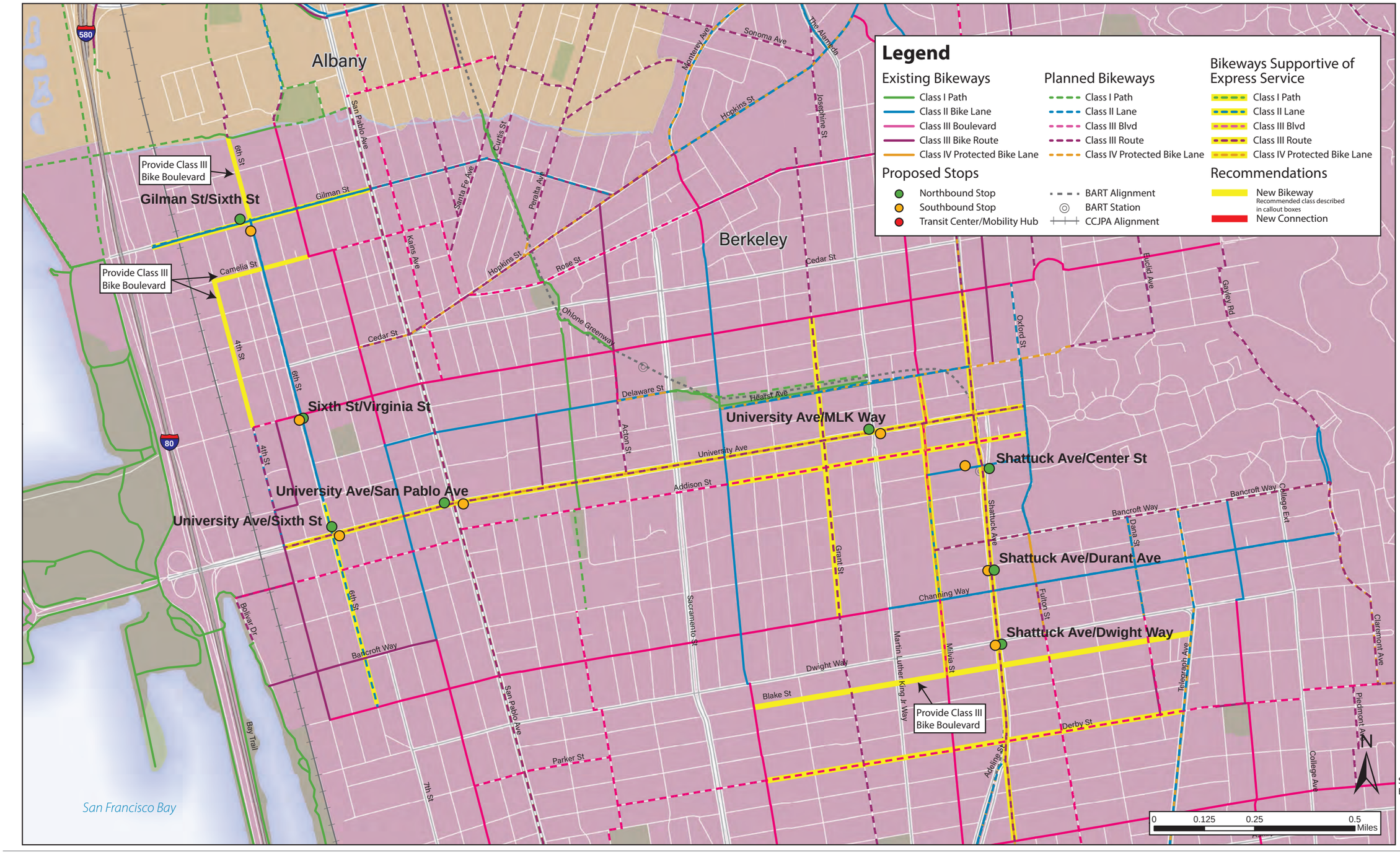
By providing physical separation on high-volume or high-speed streets and traffic calming treatments on lower-volume streets, traveling by bicycle can be a viable mode for a much wider range of potential transit riders.

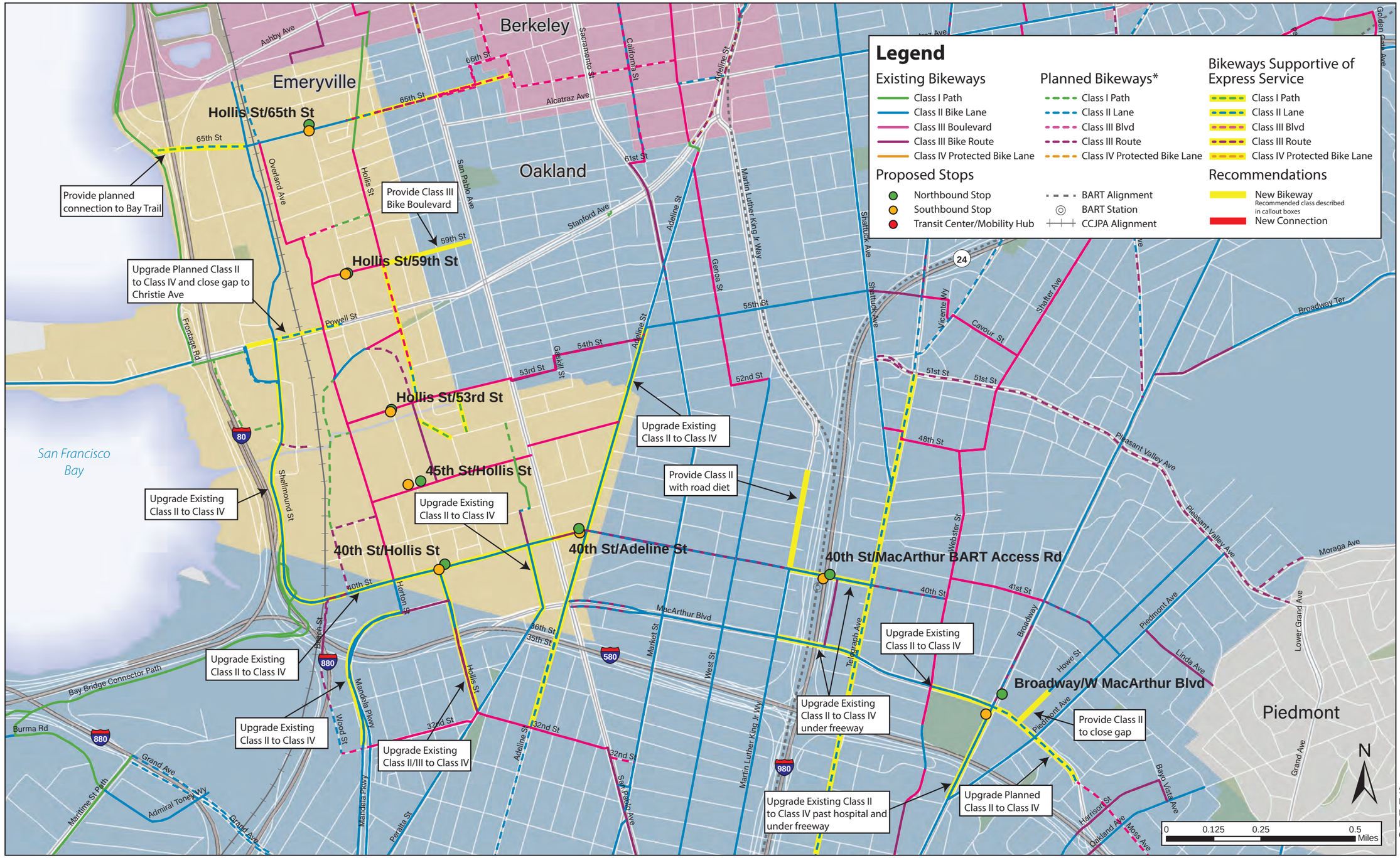
As part of this project, existing and currently planned bicycle infrastructure were analyzed to recommend new projects and prioritize currently-planned projects that would be particularly supportive of the proposed express bus service. It should be noted that, given the lack of either bikeshare or secure bicycle parking facilities in the West County portion of the proposed service area, it is more likely that express bus riders will employ a bike on the destination end of their trip than on the origin end. It is encouraged that shared micro-mobility services and bike parking be expanded in West County. These features are included in mobility hubs proposed as part of this project, but a complete network of bicycle services and facilities is needed in order for them to be effective. Graphics of all identified bicycle access gaps are included in this appendix.



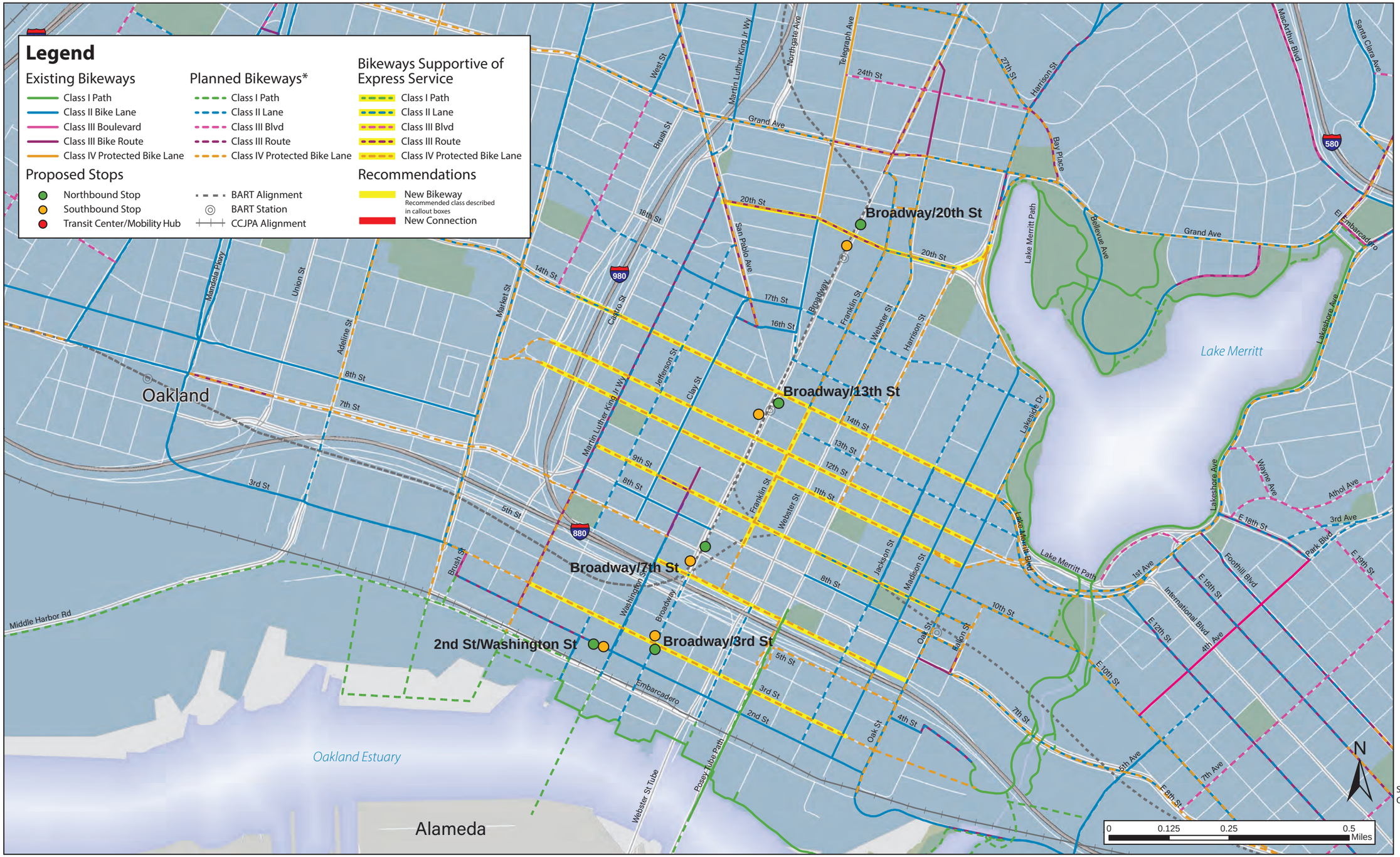
Sources: CCTA Countywide Bike Plan


Legend
Existing Bikeways
Class I Path
Class II Bike Lane
Class III Boulevard
Class III Bike Route
Class IV Protected Bike Lane
Planned Bikeways
Class I Path
Class II Lane
Class III Blvd
Class III Route
Class IV Protected Bike Lane
Bikeways Supportive of Express Service
Class I Path
Class II Lane
Class III Blvd
Class III Route
Class IV Protected Bike Lane
Proposed Stops
Northbound Stop
Southbound Stop
Transit Center/Mobility Hub
BART Alignment
BART Station
CCJPA Alignment
Recommendations
New Bikeway
Recommended class described in callout boxes
New Connection
Richmond
San Pablo
Contra Costa College
Broadway/Rumrill Blvd
San Pablo Ave/Stone St
23rd St/Dover Ave
Rumrill Blvd/Rd 20
Rumrill Blvd/Market Ave
13th St/Rheem Ave
23rd St/Rheem Ave
23rd St/Garvin Ave
Harbour Way/Roosevelt Ave
Macdonald Ave/37th St
Potential Bissell Ave Mobility Hub
Macdonald Ave/27th St/Broadway
23rd St/Preble Ave
Harbour Way/Macdonald Ave
Harbour Way/Maine Ave
Provide Class III Bike Boulevard
Provide Class III Bike Boulevard
Upgrade Planned Class III to Class II
Upgrade Planned Class III to Class II with road diet
Provide Class III and open connection for bikes at Rumrill
Provide Class II
Provide Class III
Provide Class III Bike Route
Upgrade Planned Class II/III to Class IV over train tracks
Upgrade Planned Class III to Class IV over train tracks
Upgrade Planned Class II to Class IV on overpass
Provide Class III
Provide Class III Bike Boulevard
Upgrade Existing Class II to Class IV
Upgrade Planned Class III to Class IV under freeway
Upgrade Planned Class II to Class IV
Planned Class I cut-through at school
Upgrade Planned Class III to Class IV
Sources: CCTA Countywide Bike Plan
0 0.125 0.25 0.5 Miles

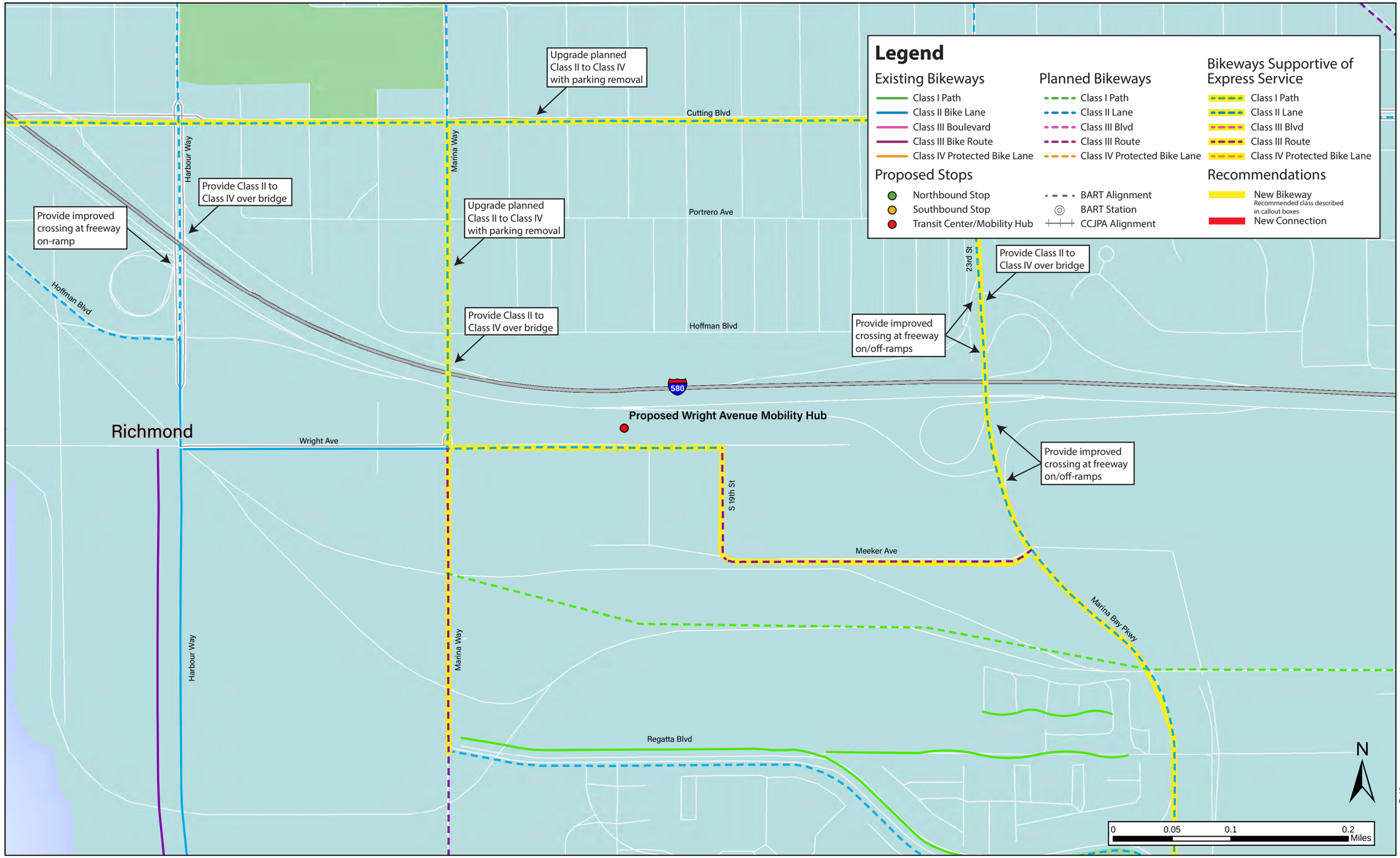

Legend
Existing Bikeways
Class I Path
Class II Bike Lane
Class III Boulevard
Class III Bike Route
Class IV Protected Bike Lane
Planned Bikeways
Class I Path
Class II Lane
Class III Blvd
Class III Route
Class IV Protected Bike Lane
Bikeways Supportive of Express Service
Class I Path
Class II Lane
Class III Blvd
Class III Route
Class IV Protected Bike Lane
Proposed Stops
Northbound Stop
Southbound Stop
Transit Center/Mobility Hub
BART Alignment
BART Station
CCJPA Alignment
Recommendations
New Bikeway
Recommended class described in callout boxes
New Connection
Albany
Berkeley
Gilman St/Sixth St
Provide Class III Bike Boulevard
Provide Class III Bike Boulevard
Sixth St/Virginia St
University Ave/MLK Way
Shattuck Ave/Center St
University Ave/San Pablo Ave
University Ave/Sixth St
Shattuck Ave/Durant Ave
Shattuck Ave/Dwight Way
Provide Class III Bike Boulevard
San Francisco Bay
Sources:
Berkeley Bicycle Plan
0 0.125 0.25 0.5 Miles



Sources:
Berkeley Bicycle Plan, Emeryville Pedestrian and Bicycle Plan, Let's Bike Oakland 2019 Bike Plan

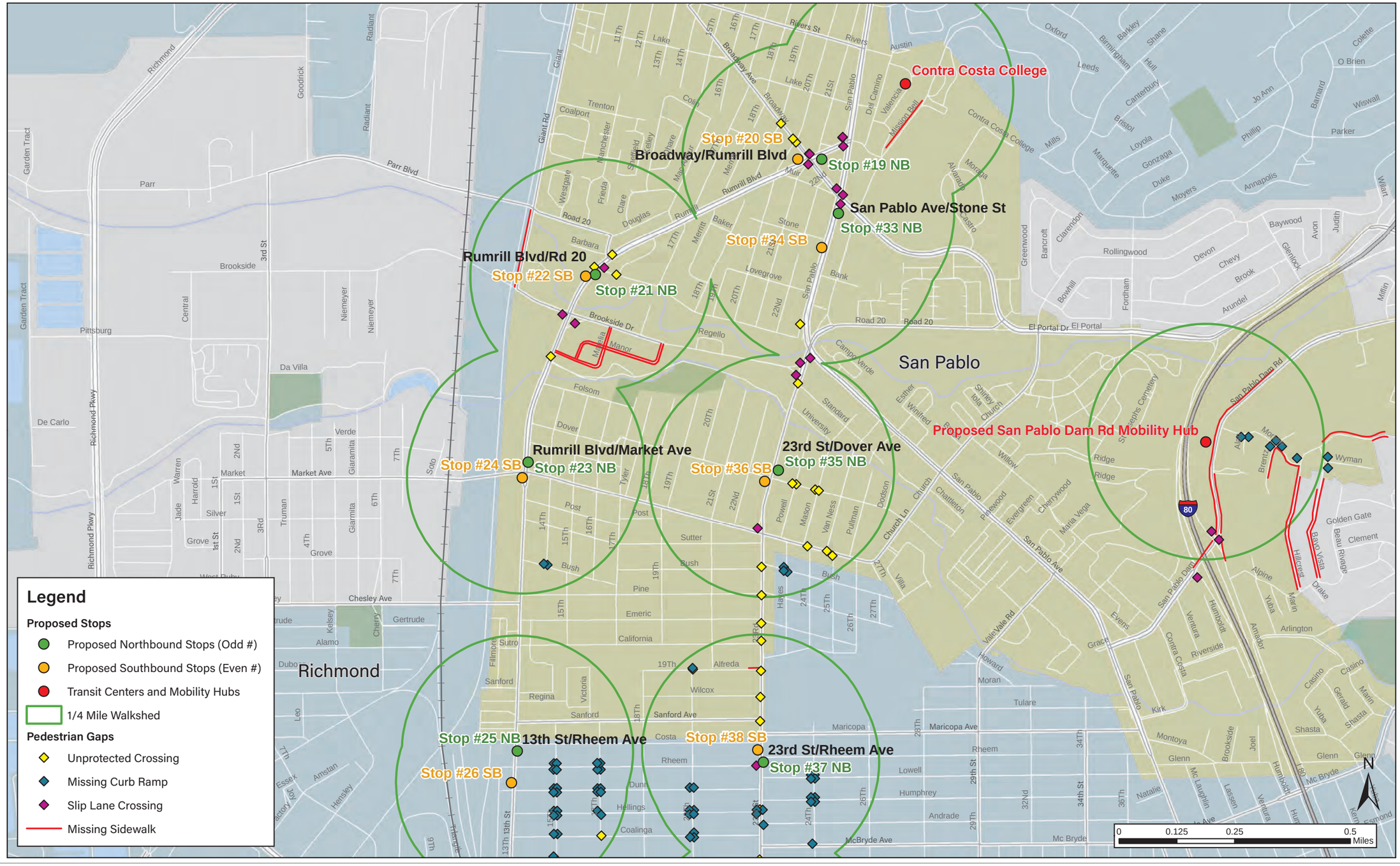


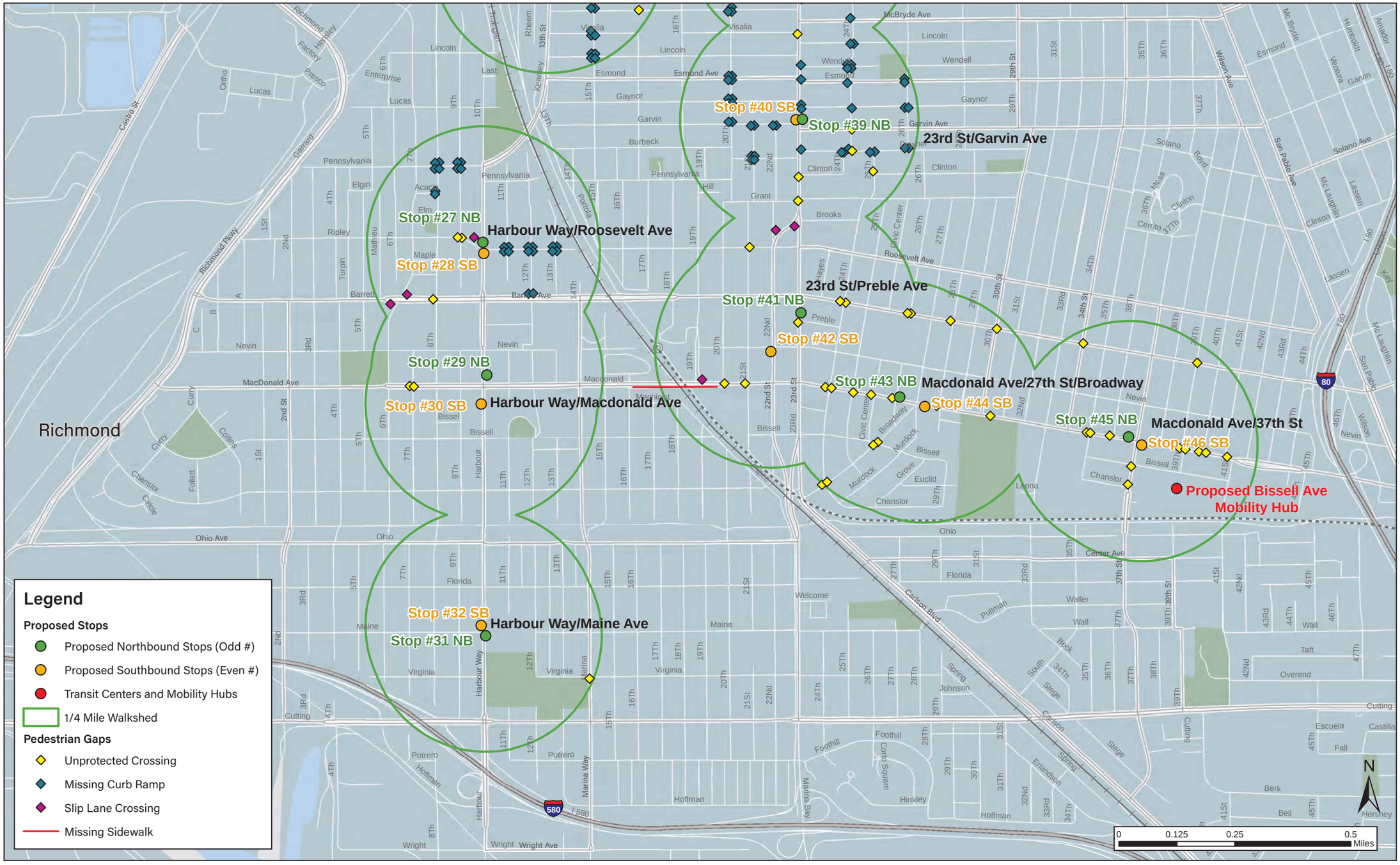
Sources: Let's Bike Oakland 2019 Bike Plan

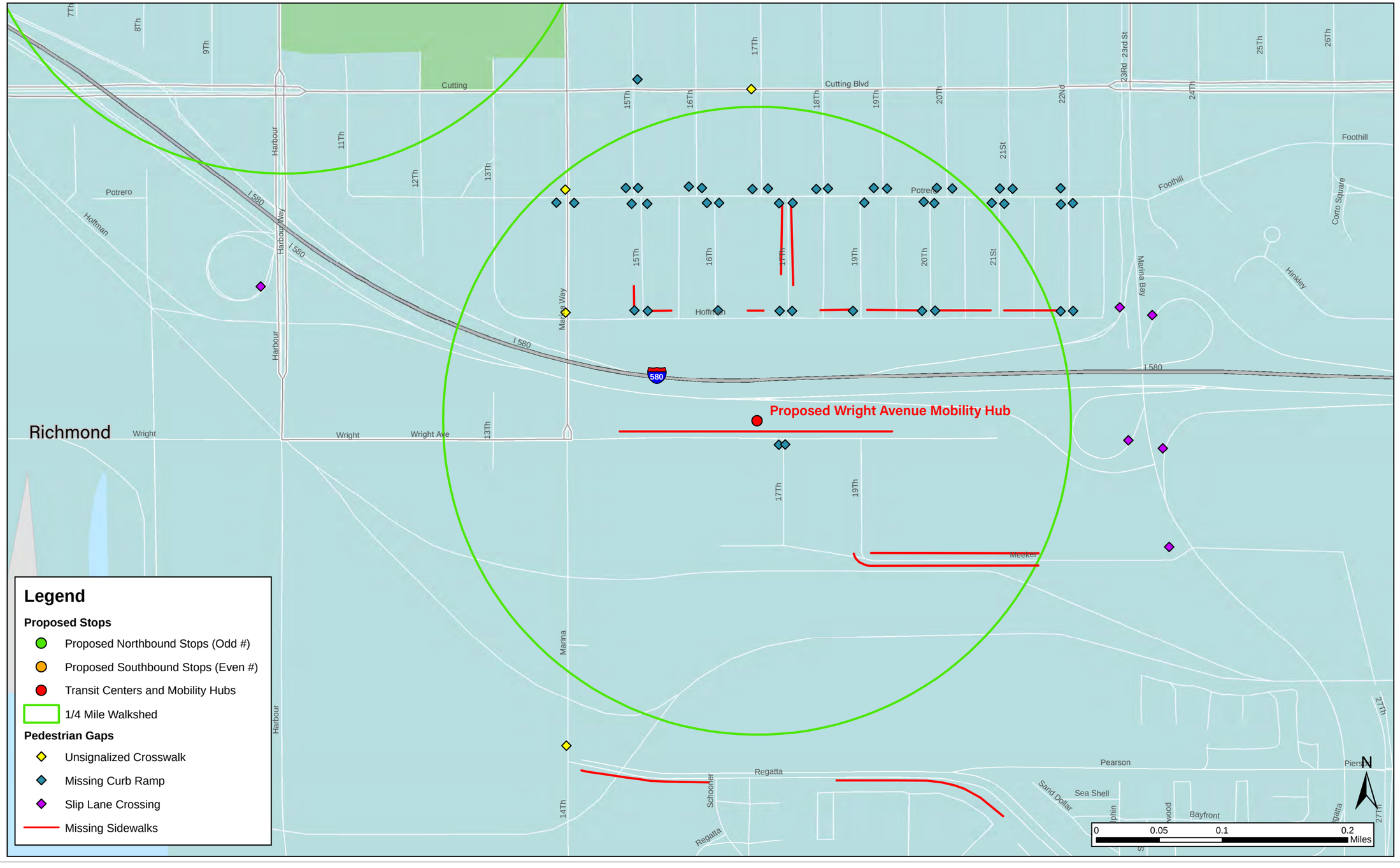


Sources: CCTA Countywide Bike Plan


San Pablo Ave/Pinole Shores Dr
Stop #10 SB
Stop #9 NB
San Pablo Ave/Del Monte Dr
Stop #12 SB
Stop #11 NB
Proposed Tara Hills Dr
Mobility Hub (Option 2)
San Pablo Ave/Tara Hills Dr
Stop #14 SB
Stop #13 NB
Proposed Tara Hills Dr
Mobility Hub (Option 1)
Stop #16 SB
San Pablo Ave/Shamrock Dr
Stop #15 NB
Stop #17 NB
Richmond Pkwy/Bella Vista Apartments
Stop #18 SB
Richmond Pkwy Transit Center
Pinole
Legend
Proposed Stops
Proposed Northbound Stops (Odd #)
Proposed Southbound Stops (Even #)
Transit Centers and Mobility Hubs
1/4 Mile Walkshed
Pedestrian Gaps
Unprotected Crossing
Missing Curb Ramp
Slip Lane Crossing
Missing Sidewalk
0 0.125 0.25 0.5 Miles
N


Contra Costa College
Stop #20 SB
Broadway/Rumrill Blvd
Stop #19 NB
San Pablo Ave/Stone St
Stop #33 NB
Stop #34 SB
Rumrill Blvd/Rd 20
Stop #22 SB
Stop #21 NB
San Pablo
Proposed San Pablo Dam Rd Mobility Hub
Rumrill Blvd/Market Ave
Stop #24 SB
Stop #23 NB
23rd St/Dover Ave
Stop #36 SB
Stop #35 NB
Richmond
Stop #25 NB
13th St/Rheem Ave
Stop #26 SB
Stop #38 SB
23rd St/Rheem Ave
Stop #37 NB
Legend
Proposed Stops
Proposed Northbound Stops (Odd #)
Proposed Southbound Stops (Even #)
Transit Centers and Mobility Hubs
1/4 Mile Walkshed
Pedestrian Gaps
Unprotected Crossing
Missing Curb Ramp
Slip Lane Crossing
Missing Sidewalk
0 0.125 0.25 0.5 Miles
N


Stop #40 SB
Stop #39 NB
23rd St/Garvin Ave
Stop #27 NB
Harbour Way/Roosevelt Ave
Stop #28 SB
23rd St/Preble Ave
Stop #41 NB
Stop #42 SB
Stop #29 NB
Stop #43 NB
Macdonald Ave/27th St/Broadway
Stop #30 SB
Harbour Way/Macdonald Ave
Stop #44 SB
Stop #45 NB
Macdonald Ave/37th St
Stop #46 SB
Proposed Bissell Ave Mobility Hub
Stop #32 SB
Harbour Way/Maine Ave
Stop #31 NB
Richmond
Legend
Proposed Stops
Proposed Northbound Stops (Odd #)
Proposed Southbound Stops (Even #)
Transit Centers and Mobility Hubs
1/4 Mile Walkshed
Pedestrian Gaps
Unprotected Crossing
Missing Curb Ramp
Slip Lane Crossing
Missing Sidewalk
0 0.125 0.25 0.5 Miles
N



Legend

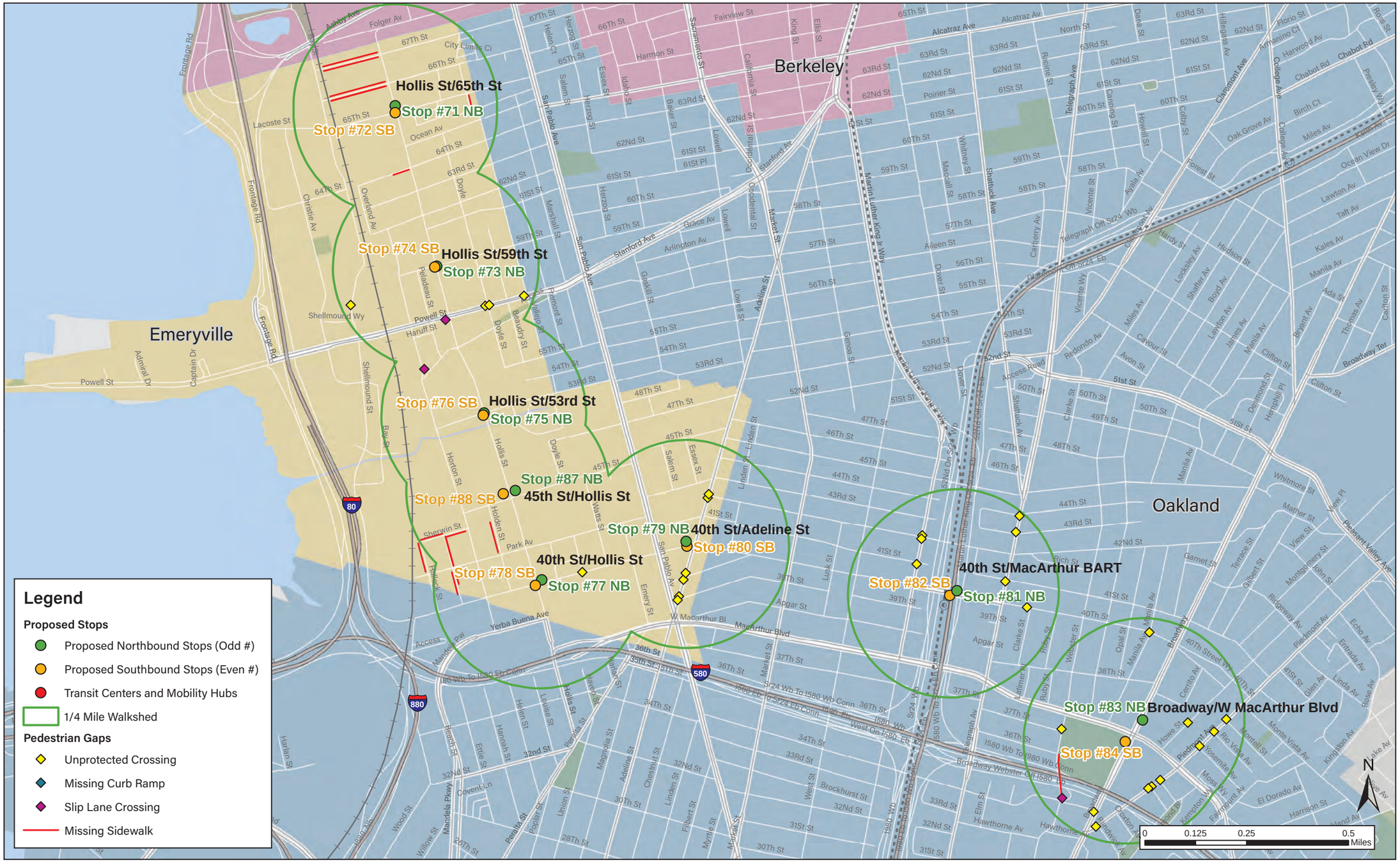
Proposed Stops

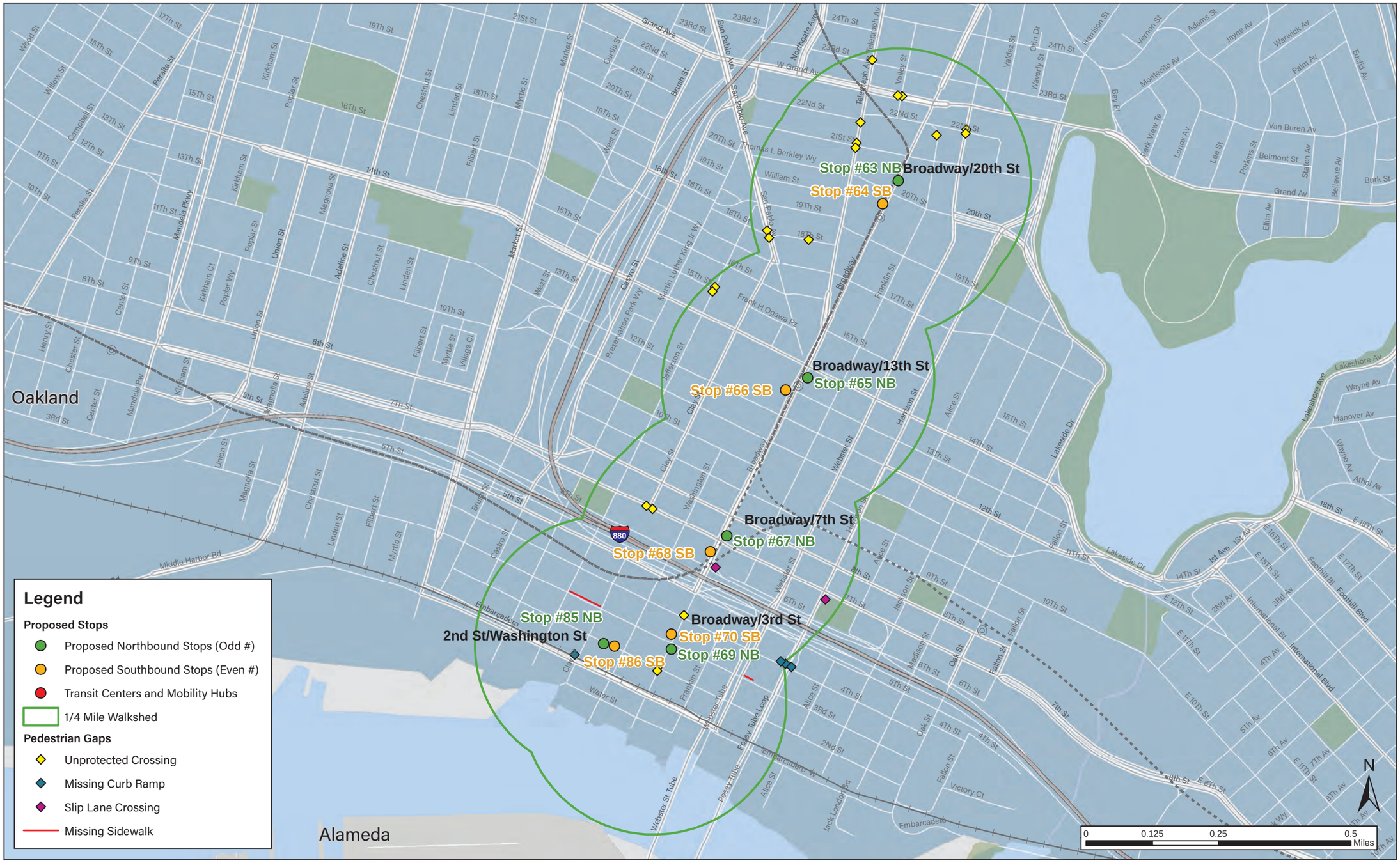
- Proposed Northbound Stops (Odd #)
- Proposed Southbound Stops (Even #)
- Transit Centers and Mobility Hubs
- 1/4 Mile Walkshed

Pedestrian Gaps

- Unsignalized Crosswalk
- Missing Curb Ramp
- Slip Lane Crossing
- Missing Sidewalks

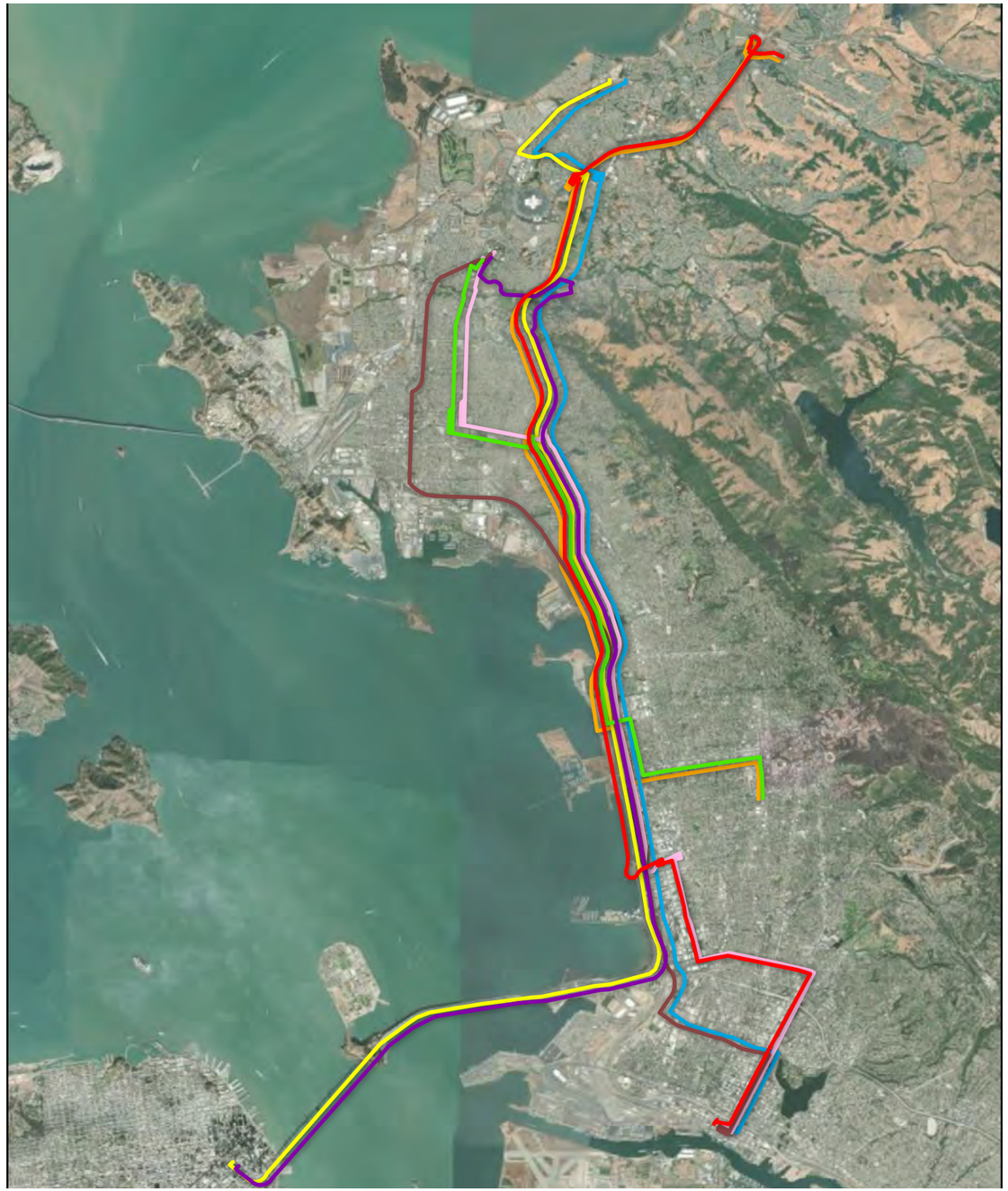

Albany
Berkeley
Stop #47 NB
Gilman St/Sixth St
Stop #48 SB
Stop #50 SB
Sixth St/Virginia St
Stop #49 NB
Stop #53 NB
University Ave/San Pablo Ave
Stop #54 SB
Stop #51 NB
University Ave/Sixth St
Stop #52 SB
Stop #55 NB
University Ave/MLK Way
Stop #56 SB
Stop #58 SB
Shattuck Ave/Center St
Stop #57 NB
Stop #60 SB
Shattuck Ave/Durant Ave
Stop #59 NB
Stop #62 SB
Shattuck Ave/Dwight Way
Stop #61 NB
Legend
Proposed Stops
Proposed Northbound Stops (Odd #)
Proposed Southbound Stops (Even #)
Transit Centers and Mobility Hubs
1/4 Mile Walkshed
Pedestrian Gaps
Unprotected Crossing
Missing Curb Ramp
Slip Lane Crossing
Missing Sidewalk
N
0 0.125 0.25 0.5 Miles


Hollis St/65th St
Stop #71 NB
Stop #72 SB
Stop #74 SB
Hollis St/59th St
Stop #73 NB
Stop #76 SB
Hollis St/53rd St
Stop #75 NB
Stop #87 NB
45th St/Hollis St
Stop #88 SB
Stop #79 NB
40th St/Adeline St
Stop #80 SB
40th St/Hollis St
Stop #78 SB
Stop #77 NB
Stop #82 SB
40th St/MacArthur BART
Stop #81 NB
Stop #83 NB
Broadway/W MacArthur Blvd
Stop #84 SB
Berkeley
Emeryville
Oakland
Legend
Proposed Stops
Proposed Northbound Stops (Odd #)
Proposed Southbound Stops (Even #)
Transit Centers and Mobility Hubs
1/4 Mile Walkshed
Pedestrian Gaps
Unprotected Crossing
Missing Curb Ramp
Slip Lane Crossing
Missing Sidewalk
N
0 0.125 0.25 0.5 Miles


Stop #63 NB Broadway/20th St
Stop #64 SB
Broadway/13th St
Stop #65 NB
Stop #66 SB
Broadway/7th St
Stop #67 NB
Stop #68 SB
Broadway/3rd St
Stop #70 SB
Stop #69 NB
Stop #85 NB
2nd St/Washington St
Stop #86 SB
Oakland
Alameda
Legend
Proposed Stops
Proposed Northbound Stops (Odd #)
Proposed Southbound Stops (Even #)
Transit Centers and Mobility Hubs
1/4 Mile Walkshed
Pedestrian Gaps
Unprotected Crossing
Missing Curb Ramp
Slip Lane Crossing
Missing Sidewalk
N
0 0.125 0.25 0.5 Miles

G.

OPERATIONS AND MAINTENANCE MEMORANDUM



WCCTAC AC TRANSIT WESTCAT Caltrans

WEST CONTRA COSTA COUNTY
EXPRESS BUS IMPLEMENTATION PLAN

PROPOSED SERVICE PLANS (FINAL)

December | 2019

Connetics Transportation Group

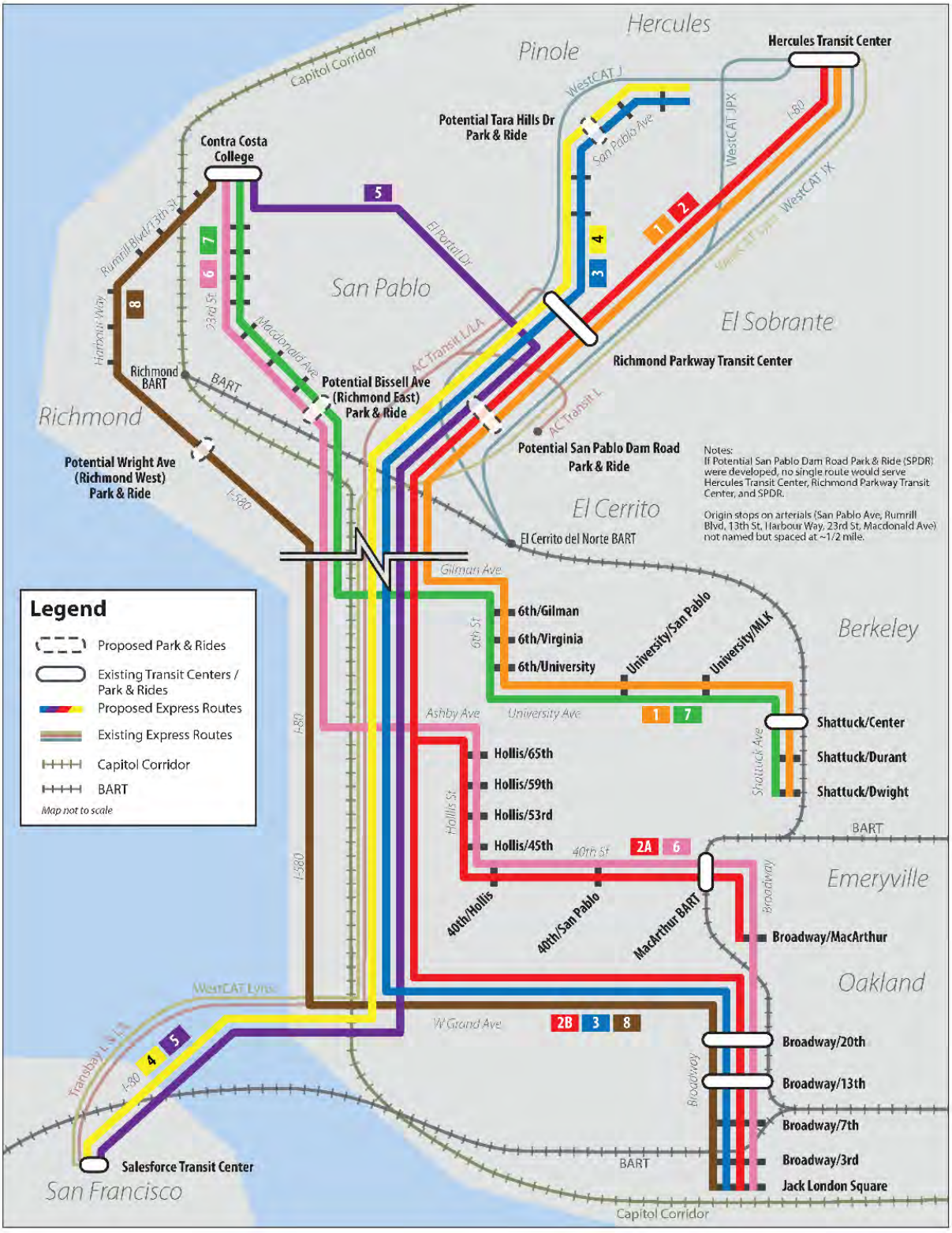
INTRODUCTION

This Technical Memorandum presents methodology, assumptions and results with developed schedules, service plans, O&M costs and fare revenue projections for express bus routes being considered by West Contra Costa Transportation Advisory Committee (WCCTAC). Potential express routes that have been analyzed are as follows:

- **Route 1:** Hercules Transit Center and Richmond Transit Center to Berkeley
- **Route 2:** Hercules Transit Center and Richmond Parkway Transit Center to Oakland/Jack London Square via Emeryville
- **Route 3:** Pinole and Richmond Parkway Transit Center via San Pablo Avenue to Oakland/Jack London Square
- **Route 4:** Pinole and Richmond Parkway Transit Center via San Pablo Avenue to Salesforce Transit Center in San Francisco
- **Route 5:** San Pablo, El Sobrante, and potential San Pablo Dam Road P&R to Salesforce Transit Center
- **Route 6:** San Pablo, Richmond, and potential Richmond East P&R to Oakland/Jack London Square via Emeryville
- **Route 7:** San Pablo, Richmond, and potential Richmond East P&R to Berkeley
- **Route 8:** San Pablo, Richmond, and potential Richmond West P&R to Oakland/Jack London Square

Longer-term, Route 2 has been analyzed as two separate routes: Route 2A, which would terminate in Emeryville, and Route 2B, which would terminate at Jack London Square. Routes 1 through 4 are assumed to be operated by WestCAT and Routes 5 through 8 are assumed to be operated by AC Transit. **Figure 1** presents route alignment map.

Figure 1: Proposed Express Bus Routes – Long Term



SCHEDULE ASSUMPTIONS

The first step to developing schedules is the estimate of route travel times. Primary express routes currently serving the I-80 corridor include WestCAT's Lynx, Route JX/JPX (Hercules Transit Center to El Cerrito del Norte BART), and Route JR/JL (also Hercules Transit Center to El Cerrito del Norte BART) and AC Transit's Route LA (Hilltop P&R to Salesforce Transit Center). Since these routes have limited applicability to the routes being considered for this project, travel time estimates were developed by compiling hourly Google traffic speed data by direction for 60 roadway segments that were defined for this project. The speed data was queried for results in the future (Google has predictive data on traffic speeds which feed into Google Maps directions) as opposed to current day data in order to avoid selecting speeds that might be impacted by a non-recurring traffic incident. This speed information was then used as inputs into travel time spreadsheet-based models that were developed for each route. Run times between stops take into consideration acceleration/deceleration (1.5 mphps acceleration /2.0 mphps deceleration) between assumed stops and stop dwell times (15 seconds to 1 minute, categorized depending on the estimated level of demand at the stop). Routes across the Bay Bridge include additional time to account for unexpected congestion.

Table 1 summarizes route travel time estimates by time period. Route travel time summaries by time period and by direction are provided in **Appendix A**. Travel times presented in Table 1 are slightly greater than those in Appendix A due to rounding of times between timepoints and consideration of additional congestion around the Bay Bridge toll plaza for Routes 4 and 5. Times shown below are consistent with those used in schedules presented in Appendix B.

Table 1: Route Travel Time Estimates by Time Period

Route	AM Peak Dir. Time	Midday Time (Avg.)	PM Peak Dir. Time
1	44 min.	40 min.	45 min.
2	61 min.	56 min.	63 min.
2A*	50 min.	45 min.	54 min.
2B*	47 min.	45 min.	50 min.
3	49 min.	47 min.	50 min.
4	57 min.	54 min.	50 min.
5	48 min.	45 min.	45 min.
6	54 min.	52 min.	52 min.
7	43 min.	42 min.	44 min.
8	46 min.	48 min.	54 min.

* Routes 2A and 2B reflect proposed longer-term routes.

Schedules were then developed with these travel time estimates. Two schedules were developed for each route:

- Peak period, peak direction-only service (15 to 30-minute frequencies between 5 am and 9 pm and between 3 pm and 7 pm). Proposed schedules result in 26 one-way trips each weekday for each route.
- Peak period, peak direction service with limited midday service (both directions). Two-hour frequencies were achievable with one bus for all but Route 4, which required frequencies at 2 hours and 15 minutes with one bus. Proposed schedules result in 32 one-way trips each weekday for each route except Route 4, which has 30 one-way trips.

Appendix B presents proposed schedules for each route. These schedules identify bus block assignments, estimated pull-out and pull-In times from nearby WestCAT or AC Transit garage locations, end-of-line layover times and deadhead times for buses returning to make a second trip. Deadhead assignments include a 10-minute cushion when assigning buses to blocks. A summary of daily route-level service requirements is provided below in **Table 2**. Note that the below table presents estimated *total* hours and miles of service (i.e., total hours include pull-out, pull-in, layover and deadhead times).

Table 2: Daily Route Service Requirements

Route	Peak Buses	Fleet Buses**	Total Daily Hours		Total Daily Miles	
			Peak Only	Peak w/ Midday	Peak Only	Peak w/ Midday
1	6	8	42.4	47.8	851	918
2	8	10	51.4	57.8	1,086	1,203
2A*	7	9	47.8	53.3	994	1,071
2B*	7	9	47.9	47.9	1,047	1,047
3	6	8	45.2	50.5	944	1,039
4	7	9	47.0	53.0	1,057	1,143
5	7	9	46.2	52.7	982	881
6	6	8	44.9	50.3	791	856
7	6	8	42.2	47.6	623	676
8	7	9	46.4	51.6	810	881

* Routes 2A and 2B reflect proposed longer-term routes.

** Fleet Bus requirements could be lower if implementing more than one route concurrently.

ANNUAL O&M COSTS

Service statistics presented in Table 2 were annualized (assuming 255 weekdays of service) and applied to unit costs to arrive at estimates of annual O&M costs. WestCAT O&M costs were estimated by using a rate of $90 for each total hour of bus service (revenue and deadhead). AC Transit O&M costs were estimated by using a rate of $140 for each total hour of bus service (revenue and deadhead). Both rates were provided by the operators.

Resulting O&M cost estimates using the service statistics presented in Table 2 and the unit costs presented above are summarized below in **Table 3**.

Table 3: Annual O&M Cost Estimates by Route (2019$)

Route	Operator	Peak Only	Peak & Midday
1	WC	$972,000	$1,097,000
2	WC	$1,180,000	$1,326,000
2A*	WC	$1,097,000	$1,222,000
2B*	WC	$1,098,000	$1,098,000
3	WC	$1,037,000	$1,159,000
4	WC	$1,078,000	$1,216,000
5	AC	$1,650,000	$1,881,000
6	AC	$1,603,000	$1,796,000
7	AC	$1,508,000	$1,701 ,000
8	AC	$1,655,000	$1,842,000

* Routes 2A and 2B reflect proposed longer-term routes

RIDERSHIP ASSUMPTIONS

Ridership estimates are based on travel markets served by the proposed routes with anticipated capture pivoted off of existing transit services in similar markets. Ridership estimates are approximate for the purposes of revenue projections only and are not based on an adopted travel demand model. Ridership estimates are provided as a range to account for uncertainty in future travel patterns. Ridership estimates are based on existing land use and congestion levels and do not reflect anticipated population growth and increase in congestion. The ridership estimates assume buildout of full park & ride capacity as indicated in the project's Capital Improvements Technical Memorandum (October 2019).

FARE REVENUE AND SUBSIDY REQUIREMENTS

Potential fare revenues were determined by applying an average fare revenue to ridership estimates. Kimley-Horn and Associates provided a ridership estimate range for each route. Assumptions regarding fares are as follows:

WestCAT Fares

WestCAT's Lynx Transbay route has a one-way fare of $5.00. Discounts are available for riders aged 65 and over, and disabled/Medicare riders. A discounted fare is also possible with a 31-day pass, depending on the amount of use. For purposes of this analysis, a $5.00 fare has been assumed for Route 4 – a proposed WestCAT-operated Transbay route from Hercules. WestCAT's cash fare for local fixed route bus service is $1.75. Since Routes 1, 2 and 3 are longer-distance East Bay routes, a fare of $3.50 has been assumed (between the local and Lynx fares). The average fare collected was assumed to be 85 percent of the full fare to account for impacts related to discounts.

AC Transit Fares

AC Transit's Route LA (a Transbay route) currently has a fare of $5.50. Thus, this fare was also assumed for Route 5 (Contra Costa College to SF Transbay). For Routes 7, 8 and 9 (East Bay routes), a fare of $2.50 has been assumed. This is AC Transit's current local route cash fare, which is consistent with the fare currently charged on AC Transit's Routes 72, 72M and 800 (corridor routes that are similar in length/market to Routes 6, 7 and 8). The average fare collected was assumed to be 85 percent of the full fare to account for impacts related to discounts. AC Transit currently provides fare discounts for youth (age 5-18), seniors and disabled riders. AC Transit also has a 31-day pass which can provide a discounted fare depending on amount of use.

Farebox Recovery/Subsidy Required

Table 4 presents estimated farebox recovery ratios and subsidy requirements by route for the low and high ridership projections. Higher subsidies are required for Routes 6 through 8 – AC Transit proposed routes where local fares are assumed. For comparison purposes, the 2017 NTD indicates that WestCAT's farebox recovery ratio for commuter bus service is 62 percent and AC Transit's is 34 percent.

Table 4: Estimates of Farebox Revenues and Subsidy Requirements

15-30 Min. Peak Only Service

Route	Operator	Daily Ridership Low	Daily Ridership High	Annual Ridership Low	Annual Ridership High	Cash Fare	Net Fare	Passenger Revenue Low	Passenger Revenue High	Annual O&M Cost	Farebox Recovery Low	Farebox Recovery High	Subsidy Required Low	Subsidy Required High
1	WC	366	549	93,300	140,000	$3.50	$2.98	*$278,000*	*$417,000*	$972,000	29%	43%	$694,000	$555,000
2	WC	557	835	142,000	212,900	$3.50	$2.98	*$422,000*	*$633,000*	$1,180,000	36%	54%	$758,000	$547,000
*2A**	WC	277	415	70,600	105,800	$3.50	$2.98	*$210,000*	*$315,000*	$1,097,000	19%	29%	$887,000	$782,000
*2B**	WC	559	839	142,500	213,900	$3.50	$2.98	*$424,000*	*$636,000*	$1,098,000	39%	58%	$674,000	$462,000
3	WC	316	474	80,600	120,900	$3.50	$2.98	*$240,000*	*$360,000*	$1,037,000	23%	35%	$797,000	$677,000
4	WC	544	580	138,700	147,900	$5.00	$4.25	*$589,000*	*$629,000*	$1,078,000	55%	58%	$489,000	$449,000
5	AC	293	366	74,700	93,300	$5.50	$4.68	*$349,000*	*$436,000*	$1,650,000	21%	26%	$1,301,000	$1,214,000
6	AC	501	602	127,800	153,500	$2.50	$2.13	*$272,000*	*$326,000*	$1,603,000	17%	20%	$1,331,000	$1,277,000
7	AC	427	641	108,900	163,500	$2.50	$2.13	*$231,000*	*$347,000*	$1,508,000	15%	23%	$1,277,000	$1,161,000
8	AC	299	449	76,200	114,500	$2.50	$2.13	*$162,000*	*$243,000*	$1,655,000	10%	15%	$1,493,000	$1,412,000

15-30 Min. Peak With Midday Service

Route	Operator	Daily Ridership Low	Daily Ridership High	Annual Ridership Low	Annual Ridership High	Cash Fare	Net Fare	Passenger Revenue Low	Passenger Revenue High	Annual O&M Cost	Farebox Recovery Low	Farebox Recovery High	Subsidy Required Low	Subsidy Required High
1	WC	393	589	100,200	150,200	$3.50	$2.98	*$298,000*	*$447,000*	$1,097,000	27%	41%	$799,000	$650,000
2	WC	597	896	152,200	228,500	$3.50	$2.98	*$453,000*	*$680,000*	$1,326,000	34%	51%	$873,000	$646,000
*2A**	WC	297	446	75,700	113,700	$3.50	$2.98	*$225,000*	*$338,000*	$1,222,000	18%	28%	$997,000	$884,000
*2B**	WC	600	900	153,000	229,500	$3.50	$2.98	*$455,000*	*$683,000*	$1,098,000	41%	62%	$643,000	$415,000
3	WC	332	497	84,700	126,700	$3.50	$2.98	*$252,000*	*$377,000*	$1,159,000	22%	33%	$907,000	$782,000
4	WC	588	628	149,900	160,100	$5.00	$4.25	*$637,000*	*$680,000*	$1,216,000	52%	56%	$579,000	$536,000
5	AC	317	396	80,800	101,000	$5.50	$4.68	*$378,000*	*$472,000*	$1,881,000	20%	25%	$1,503,000	$1,409,000
6	AC	430	646	109,700	164,700	$2.50	$2.13	*$233,000*	*$350,000*	$1,796,000	13%	19%	$1,563,000	$1,446,000
7	AC	458	687	116,800	175,200	$2.50	$2.13	*$248,000*	*$372,000*	$1,701,000	15%	22%	$1,453,000	$1,329,000
8	AC	321	481	81,900	122,700	$2.50	$2.13	*$174,000*	*$261,000*	$1,842,000	9%	14%	$1,668,000	$1,581,000

[1]Daily ridership is provided in ranges to reflect uncertainty in future travel patterns. Daily ridership is based on existing land use and does not reflect future population and congestion growth. Daily ridership assumes buildout of proposed park & ride capacity.
[2]Net fare reflects the average per-rider fare yield accounting for various discounts and period-based pass programs
[3]Revenues and costs are reflected in 2019 dollars
WC = WestCAT
AC = AC Transit

Appendix A
Route Travel Time Estimates

	Route 1 Southbound	Distance	AM Peak Time	AM Peak Speed	Midday Time	Midday Speed	PM Peak Time	PM Peak Speed
1	Hercules Transit Center							
		4.30	0:11:23	22.7	0:09:54	26.1	0:10:59	23.5
2	Richmond Pkwy Transit Center							
		8.83	0:17:38	30.0	0:15:02	35.2	0:15:02	35.2
3	Gilman/6th							
		0.50	0:02:24	12.5	0:02:46	10.8	0:02:46	10.8
	6th/Virginia							
		0.35	0:01:48	11.7	0:02:03	10.2	0:02:03	10.2
	University/6th							
		0.32	0:01:31	12.7	0:01:41	11.4	0:01:54	10.1
	University/San Pablo							
		1.05	0:04:01	15.7	0:04:36	13.7	0:05:25	11.6
	University/MLK							
		0.35	0:01:52	11.3	0:02:03	10.2	0:02:18	9.1
4	Downtown Berkeley BART							
		0.27	0:01:21	12.0	0:01:29	10.9	0:01:40	9.7
	Shattuck/Durant							
		0.20	0:01:12	10.0	0:01:20	9.0	0:01:20	9.0
5	Shattuck/Dwight							
	Total	16.17	0:43:10	22.5	0:40:54	23.7	0:43:27	22.3

	Route 1 Northbound	Distance	AM Peak Time	AM Peak Speed	Midday Time	Midday Speed	PM Peak Time	PM Peak Speed
1	Shattuck/Dwight							
		0.20	0:01:12	10.0	0:01:20	9.0	0:01:20	9.0
	Shattuck/Durant							
		0.25	0:01:32	9.8	0:01:39	9.1	0:01:49	8.3
2	Downtown Berkeley BART							
		0.44	0:01:56	13.7	0:02:09	12.3	0:02:29	10.6
	University/MLK							
		1.07	0:04:05	15.7	0:04:41	13.7	0:05:30	11.7
	University/San Pablo							
		0.30	0:01:27	12.4	0:01:36	11.3	0:01:49	9.9
	University/6th							
		0.28	0:01:31	11.1	0:01:43	9.8	0:01:43	9.8
	6th/Virginia							
		0.54	0:02:33	12.7	0:02:58	10.9	0:02:58	10.9
3	Gilman/6th							
		8.69	0:21:34	24.2	0:13:20	39.1	0:18:09	28.7
4	Richmond Pkwy Transit Center							
		4.13	0:09:49	25.2	0:08:36	28.8	0:09:49	25.2
5	Hercules Transit Center							
	Total	15.90	0:45:39	20.9	0:38:02	25.1	0:45:36	20.9

	Route 2 Southbound	Distance	AM Peak Time	AM Peak Speed	Midday Time	Midday Speed	PM Peak Time	PM Peak Speed
1	Hercules Transit Center							
		4.3	0:11:23	22.7	0:09:54	26.1	0:10:59	23.5
2	Richmond Pkwy Transit Center							
		11.55	0:24:34	28.2	0:18:42	37.1	0:21:49	31.8
3	Hollis/65th							
		0.4	0:02:00	12.0	0:02:00	12.0	0:02:17	10.5
	Hollis/59th							
		0.38	0:01:55	11.9	0:01:55	11.9	0:02:12	10.4
	Hollis/53rd							
		0.22	0:01:17	10.3	0:01:17	10.3	0:01:25	9.3
	Hollis/45th							
		0.21	0:01:14	10.2	0:01:23	9.1	0:01:23	9.1
	40th/Hollis							
		0.38	0:01:43	13.3	0:01:55	11.9	0:01:55	11.9
	40th/Adeline							
		0.66	0:02:56	13.5	0:03:17	12.1	0:03:17	12.1
4	MacArthur BART							
		0.83	0:03:16	15.2	0:03:43	13.4	0:03:43	13.4
	MacArthur/Broadway							
		1.19	0:04:45	15.0	0:04:45	15.0	0:04:45	15.0
5	19th Street BART							
		0.4	0:02:15	10.7	0:02:15	10.7	0:02:15	10.7
6	12th Street BART							
		0.35	0:01:48	11.7	0:01:48	11.7	0:01:48	11.7
	7th/Broadway							
		0.18	0:01:07	9.7	0:01:07	9.7	0:01:07	9.7
	3rd/Broadway							
		0.15	0:01:15	7.2	0:01:15	7.2	0:01:15	7.2
7	2nd/Washington (J. London Sq.)							
	Total	21.20	0:50:18	25.3	0:44:06	28.8	0:49:00	26.0

	Route 2 Northbound	Distance	AM Peak Time	AM Peak Speed	Midday Time	Midday Speed	PM Peak Time	PM Peak Speed
7	2nd/Washington (J. London Sq.)							
		0.16	0:01:08	8.5	0:01:08	8.5	0:01:08	8.5
	3rd/Broadway							
		0.23	0:01:28	9.4	0:01:28	9.4	0:01:28	9.4
	7th/Broadway							
		0.35	0:02:18	9.1	0:02:18	9.1	0:02:18	9.1
6	12th Street BART							
		0.4	0:02:32	9.5	0:02:32	9.5	0:02:32	9.5
5	19th Street BART							
		1.2	0:04:32	15.9	0:04:32	15.9	0:04:32	15.9
	MacArthur/Broadway							
		0.76	0:03:16	14.0	0:03:41	12.4	0:03:41	12.4
4	MacArthur BART							
		0.68	0:02:45	14.8	0:03:07	13.1	0:03:07	13.1
	40th/Adeline							
		0.23	0:01:19	10.5	0:01:19	10.5	0:01:28	9.4
	Hollis/45th							
		0.36	0:01:39	13.1	0:01:50	11.8	0:01:50	11.8
	40th/Hollis							
		0.22	0:01:17	10.3	0:01:25	9.3	0:01:25	9.3
	Hollis/53rd							
		0.4	0:02:00	12.0	0:02:00	12.0	0:02:17	10.5
	Hollis/59th							
		0.41	0:02:02	12.1	0:02:02	12.1	0:02:20	10.5
3	Hollis/65th							
		11.25	0:26:20	25.6	0:19:39	34.4	0:24:01	28.1
2	Richmond Pkwy Transit Center							
		4.13	0:09:49	25.2	0:08:36	28.8	0:09:49	25.2
1	Hercules Transit Center							
	Total	20.78	1:02:25	20.0	0:55:37	22.4	1:01:56	20.1

	Route 2A Southbound	Distance	AM Peak Time	AM Peak Speed	Midday Time	Midday Speed	PM Peak Time	PM Peak Speed
1	Hercules Transit Center							
		4.3	0:11:23	22.7	0:09:54	26.1	0:10:59	23.5
2	Richmond Pkwy Transit Center							
		11.55	0:24:34	28.2	0:18:42	37.1	0:21:49	31.8
3	Hollis/65th							
		0.4	0:02:00	12.0	0:02:00	12.0	0:02:17	10.5
	Hollis/59th							
		0.38	0:01:55	11.9	0:01:55	11.9	0:02:12	10.4
	Hollis/53rd							
		0.22	0:01:17	10.3	0:01:17	10.3	0:01:25	9.3
	Hollis/45th							
		0.21	0:01:05	11.6	0:01:23	9.1	0:01:23	9.1
	40th/Hollis							
		0.38	0:01:43	13.3	0:01:55	11.9	0:01:55	11.9
	40th/Adeline							
		0.66	0:02:56	13.5	0:03:17	12.1	0:03:17	12.1
4	MacArthur BART							
		0.83	0:03:16	15.2	0:03:43	13.4	0:03:43	13.4
5	MacArthur/Broadway							
	Total	18.93	0:50:09	22.6	0:44:06	25.8	0:49:00	23.2

	Route 2A Northbound	Distance	AM Peak Time	AM Peak Speed	Midday Time	Midday Speed	PM Peak Time	PM Peak Speed
5	MacArthur/Broadway							
		0.76	0:03:16	14.0	0:03:41	12.4	0:03:41	12.4
4	MacArthur BART							
		0.68	0:02:45	14.8	0:03:07	13.1	0:03:07	13.1
	40th/Adeline							
		0.36	0:01:39	13.1	0:01:50	11.8	0:01:50	11.8
	40th/Hollis							
		0.23	0:01:19	10.5	0:01:19	10.5	0:03:18	4.2
	Hollis/45th							
		0.22	0:01:17	10.3	0:01:25	9.3	0:02:53	4.6
	Hollis/53rd							
		0.4	0:02:00	12.0	0:02:00	12.0	0:02:17	10.5
	Hollis/59th							
		0.41	0:02:02	12.1	0:02:02	12.1	0:02:20	10.5
3	Hollis/65th							
		11.25	0:26:20	25.6	0:19:39	34.4	0:24:01	28.1
2	Richmond Pkwy Transit Center							
		4.13	0:09:49	25.2	0:08:36	28.8	0:09:49	25.2
1	Hercules Transit Center							
	Total	18.44	0:50:27	21.9	0:43:39	25.3	0:53:16	20.8

	Route 2B Southbound	Distance	AM Peak Time	AM Peak Speed	Midday Time	Midday Speed	PM Peak Time	PM Peak Speed
1	Hercules Transit Center							
		4.3	0:11:23	22.7	0:09:54	26.1	0:10:59	23.5
2	Richmond Pkwy Transit Center							
		14.52	0:30:17	28.8	0:26:43	32.6	0:26:43	32.6
3	19th Street BART							
		0.4	0:02:15	10.7	0:02:32	9.5	0:02:32	9.5
4	12th Street BART							
		0.35	0:01:48	11.7	0:02:03	10.2	0:02:03	10.2
	7th/Broadway							
		0.17	0:01:05	9.4	0:01:11	8.6	0:01:11	8.6
	3rd/Broadway							
		0.13	0:01:10	6.7	0:01:15	6.2	0:01:15	6.2
4	2nd/Washington (J. London Sq.)							
	Total	19.87	0:47:58	24.9	0:43:38	27.3	0:44:43	26.7

	Route 2B Northbound	Distance	AM Peak Time	AM Peak Speed	Midday Time	Midday Speed	PM Peak Time	PM Peak Speed
5	2nd/Washington (J. London Sq.)							
		0.16	0:01:08	8.5	0:01:08	8.5	0:01:18	7.4
	3rd/Broadway							
		0.23	0:01:28	9.4	0:01:28	9.4	0:01:44	8.0
	7th/Broadway							
		0.35	0:02:18	9.1	0:02:18	9.1	0:02:42	7.8
4	12th Street BART							
		0.4	0:02:32	9.5	0:02:32	9.5	0:03:00	8.0
3	19th Street BART							
		14.4	0:33:02	26.2	0:27:43	31.2	0:31:22	27.5
2	Richmond Pkwy Transit Center							
		4.13	0:09:49	25.2	0:08:36	28.8	0:09:49	25.2
1	Hercules Transit Center							
	Total	19.67	0:50:17	23.5	0:43:45	27.0	0:49:55	23.6

	Route 3 Southbound	Distance	AM Peak Time	AM Peak Speed	Midday Time	Midday Speed	PM Peak Time	PM Peak Speed
1	San Pablo/Pinole Shores							
		0.4	0:01:47	13.5	0:02:00	12.0	0:02:00	12.0
	Del Monte Dr							
		0.42	0:01:51	13.6	0:02:05	12.1	0:02:05	12.1
	Tara Hills Dr							
		0.38	0:01:43	13.3	0:01:55	11.9	0:01:55	11.9
	Shamrock Dr							
		1.08	0:04:07	15.7	0:04:43	13.7	0:04:43	13.7
	Bella Vista Apts							
		0.45	0:03:17	8.2	0:03:17	8.2	0:03:17	8.2
2	Richmond Pkwy Transit Center							
		14.52	0:30:17	28.8	0:26:43	32.6	0:26:43	32.6
3	19th Street BART							
		0.4	0:02:15	10.7	0:02:32	9.5	0:02:32	9.5
4	12th Street BART							
		0.35	0:01:48	11.7	0:02:03	10.2	0:02:03	10.2
	7th/Broadway							
		0.17	0:01:05	9.4	0:01:11	8.6	0:01:11	8.6
	3rd/Broadway							
		0.13	0:01:10	6.7	0:01:15	6.2	0:01:15	6.2
5	2nd/Washington (J. London Sq.)							
	Total	**18.30**	**0:49:20**	**22.3**	**0:47:44**	**23.0**	**0:47:44**	**23.0**

	Route 3 Northbound	Distance	AM Peak Time	AM Peak Speed	Midday Time	Midday Speed	PM Peak Time	PM Peak Speed
1	2nd/Washington (J. London Sq.)							
	Station to station (arterial)	0.16	0:01:08	8.5	0:01:08	8.5	0:01:18	7.4
	3rd/Broadway							
	Station to station (arterial)	0.23	0:01:28	9.4	0:01:28	9.4	0:01:44	8.0
	7th/Broadway							
	Station to station (arterial)	0.35	0:02:18	9.1	0:02:18	9.1	0:02:42	7.8
2	12th Street BART							
	Station to station (arterial)	0.4	0:02:32	9.5	0:02:32	9.5	0:03:00	8.0
3	19th Street BART							
	I-80 ramp to TC	14.27	0:31:45	27.0	0:26:35	32.2	0:30:14	28.3
4	Richmond Pkwy Transit Center							
	Station to station (arterial)	0.56	0:02:07	15.9	0:02:07	15.9	0:02:20	14.4
	Bella Vista Apts							
	Station to station (arterial)	1.02	0:03:30	17.5	0:03:30	17.5	0:03:55	15.6
	Shamrock Dr							
	Station to station (arterial)	0.38	0:01:35	14.4	0:01:35	14.4	0:01:43	13.3
	Tara Hills Dr							
	Station to station (arterial)	0.4	0:01:39	14.5	0:01:39	14.5	0:01:47	13.5
	Del Monte Dr							
	Station to station (arterial)	0.3	0:01:21	13.3	0:01:21	13.3	0:01:27	12.4
5	San Pablo/Crestview							
	Total	**18.07**	**0:49:23**	**22.0**	**0:44:13**	**24.5**	**0:50:10**	**21.6**

	Route 4 Southbound	Distance	AM Peak Time	AM Peak Speed	Midday Time	Midday Speed	PM Peak Time	PM Peak Speed
1	San Pablo/Crestview							
		0.4	0:01:47	13.5	0:02:00	12.0	0:01:32	15.7
	Del Monte Dr							
		0.42	0:01:51	13.6	0:02:05	12.1	0:01:35	15.9
	Tara Hills Dr							
		0.38	0:01:43	13.3	0:01:55	11.9	0:01:29	15.4
	Shamrock Dr							
		1.08	0:04:07	15.7	0:04:43	13.7	0:03:21	19.3
	Bella Vista Apts							
		0.45	0:03:17	8.2	0:03:17	8.2	0:02:57	9.2
2	Richmond Pkwy Transit Center							
		18.75	0:39:10	28.7	0:35:10	32.0	0:41:32	27.1
3	SF Transbay Terminal							
	Total	**21.48**	**0:51:55**	**24.8**	**0:49:10**	**26.2**	**0:52:26**	**24.6**

	Route 4 Northbound	Distance	AM Peak Time	AM Peak Speed	Midday Time	Midday Speed	PM Peak Time	PM Peak Speed
3	SF Transbay Terminal							
		18.72	0:51:27	21.8	0:35:06	32.0	0:39:07	28.7
2	Richmond Pkwy Transit Center							
		0.56	0:02:07	15.9	0:02:07	15.9	0:02:20	14.4
	Bella Vista Apts							
		1.02	0:03:30	17.5	0:03:30	17.5	0:03:55	15.6
	Shamrock Dr							
		0.38	0:01:35	14.4	0:01:35	14.4	0:01:43	13.3
	Tara Hills Dr							
		0.4	0:01:39	14.5	0:01:39	14.5	0:01:47	13.5
	Del Monte Dr							
		0.3	0:01:21	13.3	0:01:21	13.3	0:01:27	12.4
1	San Pablo/Crestview							
	Total	**21.38**	**1:01:39**	**20.8**	**0:45:18**	**28.3**	**0:50:19**	**25.5**

	Route 5 Southbound	Distance	AM Peak Time	AM Peak Speed	Midday Time	Midday Speed	PM Peak Time	PM Peak Speed
1	**Contra Costa College**							
		2.65	0:08:17	19.2	0:10:15	15.5	0:10:15	15.5
2	**El Sobrante P&R**							
		16.35	0:35:03	28.0	0:31:34	31.1	0:37:06	26.4
3	**SF Transbay Terminal**							
	Total	**19.00**	**0:43:20**	**26.3**	**0:41:49**	**27.3**	**0:47:21**	**24.1**

	Route 5 Northbound	Distance	AM Peak Time	AM Peak Speed	Midday Time	Midday Speed	PM Peak Time	PM Peak Speed
3	**SF Transbay Terminal**							
		16.37	0:45:48	21.4	0:31:35	31.1	0:35:05	28.0
2	**El Sobrante P&R**							
		2.70	0:07:55	20.5	0:09:56	16.3	0:09:56	16.3
1	**Contra Costa College**							
	Total	**19.07**	**0:53:43**	**21.2**	**0:41:31**	**27.5**	**0:45:01**	**25.3**

	Route 6 Southbound	Distance	AM Peak Time	AM Peak Speed	Midday Time	Midday Speed	PM Peak Time	PM Peak Speed
1	**Contra Costa College**							
		0.48	0:02:04	13.9	0:02:04	13.9	0:02:04	13.9
	Stone St							
		0.53	0:02:14	14.2	0:02:14	14.2	0:02:14	14.2
	Dover Ave							
		0.58	0:02:24	14.5	0:02:24	14.5	0:02:24	14.5
	Rheem Ave							
		0.42	0:01:51	13.6	0:01:51	13.6	0:01:51	13.6
	Garvin Ave							
		0.52	0:02:12	14.2	0:02:12	14.2	0:02:12	14.2
	Nevin Ave							
		0.4	0:01:47	13.5	0:01:47	13.5	0:01:47	13.5
	Broadway							
		0.47	0:02:02	13.9	0:02:02	13.9	0:02:02	13.9
	37th St							
		0.55	0:03:03	10.8	0:03:03	10.8	0:03:03	10.8
2	**Richmond East P&R**							
		7.73	0:16:22	28.3	0:15:01	30.9	0:14:52	31.2
3	**Hollis/65th**							
		0.4	0:02:00	12.0	0:02:00	12.0	0:02:00	12.0
	Hollis/59th							
		0.38	0:01:55	11.9	0:01:55	11.9	0:01:55	11.9
	Hollis/53rd							
		0.22	0:01:17	10.3	0:01:17	10.3	0:01:17	10.3
	Hollis/45th							
		0.21	0:01:14	10.2	0:02:31	5.0	0:01:14	10.2
	40th/Hollis							
		0.4	0:01:47	13.5	0:01:47	13.5	0:01:47	13.5
	40th/Adeline							
		1.19	0:04:45	15.0	0:04:45	15.0	0:04:45	15.0
4	**19th Street BART**							
		0.4	0:02:15	10.7	0:02:32	9.5	0:02:32	9.5
5	**12th Street BART**							
		0.35	0:01:48	11.7	0:02:03	10.2	0:02:03	10.2
	7th/Broadway							
		0.18	0:01:07	9.7	0:01:14	8.8	0:01:14	8.8
	3rd/Broadway							
		0.15	0:02:22	3.8	0:01:20	6.7	0:01:20	6.7
6	**2nd/Washington (J. London Sq.)**							
	Total	**15.56**	**0:54:29**	**17.1**	**0:54:02**	**17.3**	**0:52:36**	**17.7**

	Route 6 Northbound	Distance	AM Peak Time	AM Peak Speed	Midday Time	Midday Speed	PM Peak Time	PM Peak Speed
6	**2nd/Washington (J. London Sq.)**							
		0.16	0:01:08	8.5	0:01:08	8.5	0:01:18	7.4
	3rd/Broadway							
		0.23	0:01:28	9.4	0:01:28	9.4	0:01:44	8.0
	7th/Broadway							
		0.35	0:02:18	9.1	0:02:18	9.1	0:02:42	7.8
5	**12th Street BART**							
		0.4	0:02:32	9.5	0:02:32	9.5	0:03:00	8.0
4	**19th Street BART**							
		0.68	0:02:45	14.8	0:02:45	14.8	0:02:45	14.8
	40th/Adeline							
		0.36	0:01:39	13.1	0:01:39	13.1	0:01:39	13.1
	40th/Hollis							
		0.23	0:01:19	10.5	0:01:19	10.5	0:01:19	10.5
	Hollis/45th							
		0.22	0:01:17	10.3	0:01:17	10.3	0:01:17	10.3
	Hollis/53rd							
		0.4	0:02:00	12.0	0:02:00	12.0	0:02:00	12.0
	Hollis/59th							
		0.41	0:02:02	12.1	0:02:02	12.1	0:02:02	12.1
3	**Hollis/65th**							
		6.9	0:15:50	26.1	0:13:09	31.5	0:14:55	27.8
2	**Richmond East P&R**							
		0.6	0:02:29	14.5	0:02:29	14.5	0:02:29	14.5
	37th St							
		0.5	0:02:08	14.1	0:02:08	14.1	0:02:08	14.1
	Broadway							
		0.36	0:01:39	13.1	0:01:39	13.1	0:01:39	13.1
	Nevin Ave							
		0.42	0:01:51	13.6	0:01:51	13.6	0:01:51	13.6
	Garvin Ave							
		0.4	0:01:47	13.5	0:01:47	13.5	0:01:47	13.5
	Rheem Ave							
		0.64	0:02:37	14.7	0:02:37	14.7	0:02:37	14.7
	Dover Ave							
		0.58	0:02:24	14.5	0:02:24	14.5	0:02:24	14.5
	Stone St							
		0.43	0:02:09	12.0	0:02:09	12.0	0:02:09	12.0
1	**Contra Costa College**							
	Total	**14.27**	**0:51:22**	**18.2**	**0:48:41**	**19.2**	**0:51:45**	**18.0**

	Route 7 Southbound	Distance	AM Peak Time	AM Peak Speed	Midday Time	Midday Speed	PM Peak Time	PM Peak Speed
1	Contra Costa College							
		0.48	0:02:04	13.9	0:02:04	13.9	0:02:04	13.9
	Stone St							
		0.53	0:02:14	14.2	0:02:14	14.2	0:02:14	14.2
	Dover Ave							
		0.58	0:02:24	14.5	0:02:24	14.5	0:02:24	14.5
	Rheem Ave							
		0.42	0:01:51	13.6	0:01:51	13.6	0:01:51	13.6
	Garvin Ave							
		0.52	0:02:08	14.6	0:02:08	14.6	0:02:08	14.6
	Nevin Ave							
		0.4	0:01:47	13.5	0:01:47	13.5	0:01:47	13.5
	Broadway							
		0.47	0:02:02	13.9	0:02:02	13.9	0:02:02	13.9
	37th St							
		0.55	0:03:03	10.8	0:03:03	10.8	0:03:03	10.8
2	Richmond East P&R							
		5.06	0:10:13	29.7	0:08:21	36.4	0:08:18	36.6
3	Gilman/6th							
		0.5	0:02:24	12.5	0:02:46	10.8	0:02:46	10.8
	6th/Virginia							
		0.35	0:01:48	11.7	0:02:03	10.2	0:02:03	10.2
	University/6th							
		0.32	0:01:31	12.7	0:01:41	11.4	0:01:54	10.1
	University/San Pablo							
		1.05	0:04:01	15.7	0:04:36	13.7	0:05:25	11.6
	University/MLK							
		0.35	0:01:52	11.3	0:02:03	10.2	0:02:18	9.1
4	Downtown Berkeley BART							
		0.27	0:01:21	12.0	0:01:29	10.9	0:01:40	9.7
	Shattuck/Durant							
		0.2	0:01:12	10.0	0:01:20	9.0	0:01:20	9.0
5	Shattuck/Dwight							
	Total	12.05	0:41:55	17.2	0:41:52	17.3	0:43:17	16.7

	Route 7 Northbound	Distance	AM Peak Time	AM Peak Speed	Midday Time	Midday Speed	PM Peak Time	PM Peak Speed
5	Shattuck/Dwight							
		0.2	0:01:12	10.0	0:01:20	9.0	0:01:20	9.0
	Shattuck/Durant							
		0.27	0:01:36	10.1	0:01:44	9.3	0:01:55	8.5
4	Downtown Berkeley BART							
		0.35	0:01:37	13.0	0:01:48	11.7	0:02:03	10.2
	University/MLK							
		1.05	0:04:01	15.7	0:04:36	13.7	0:05:25	11.6
	University/San Pablo							
		0.32	0:01:31	12.7	0:01:41	11.4	0:01:54	10.1
	University/6th							
		0.35	0:01:48	11.7	0:02:03	10.2	0:02:03	10.2
	6th/Virginia							
		0.5	0:02:24	12.5	0:02:46	10.8	0:02:46	10.8
3	Gilman/6th							
		4.58	0:11:36	23.7	0:07:49	35.2	0:10:13	26.9
2	Richmond East P&R							
		0.6	0:02:29	14.5	0:02:29	14.5	0:02:29	14.5
	37th St							
		0.5	0:02:08	14.1	0:02:08	14.1	0:02:08	14.1
	Broadway							
		0.36	0:01:39	13.1	0:01:39	13.1	0:01:39	13.1
	Nevin Ave							
		0.42	0:01:47	14.1	0:01:47	14.1	0:01:47	14.1
	Garvin Ave							
		0.4	0:01:47	13.5	0:01:47	13.5	0:01:47	13.5
	Rheem Ave							
		0.64	0:02:37	14.7	0:02:37	14.7	0:02:37	14.7
	Dover Ave							
		0.58	0:02:24	14.5	0:02:24	14.5	0:02:24	14.5
	Stone St							
		0.43	0:02:09	12.0	0:02:09	12.0	0:02:09	12.0
1	Contra Costa College							
	Total	11.55	0:42:45	16.9	0:40:47	17.7	0:44:39	16.2

	Route 8 Southbound	Distance	AM Peak Time	AM Peak Speed	Midday Time	Midday Speed	PM Peak Time	PM Peak Speed
1	Contra Costa College							
		0.33	0:01:12	16.5	0:01:12	16.5	0:01:26	13.8
	Broadway							
		0.53	0:01:36	19.9	0:01:36	19.9	0:02:02	15.6
	Road 20							
		0.46	0:01:28	18.8	0:01:28	18.8	0:01:49	15.2
	Market Ave							
		0.65	0:01:51	21.1	0:01:51	21.1	0:02:24	16.3
	Rheem Ave							
		0.68	0:01:54	21.5	0:01:54	21.5	0:02:29	16.4
	Roosevelt Ave							
		0.35	0:02:03	10.2	0:02:03	10.2	0:02:03	10.2
	MacDonald Ave							
		0.48	0:02:40	10.8	0:02:40	10.8	0:02:40	10.8
	Maine Ave							
		0.25	0:02:19	6.5	0:02:19	6.5	0:02:19	6.5
2	Richmond West P&R							
		11.22	0:18:53	35.7	0:19:14	35.0	0:18:38	36.1
3	19th Street BART							
		0.4	0:02:15	10.7	0:02:32	9.5	0:02:32	9.5
4	12th Street BART							
		0.35	0:01:48	11.7	0:02:03	10.2	0:02:03	10.2
	7th/Broadway							
		0.18	0:01:02	10.5	0:01:07	9.7	0:01:07	9.7
	3rd/Broadway							
		0.15	0:01:11	7.6	0:01:15	7.2	0:01:15	7.2
5	2nd/Washington (J. London Sq.)							
	Total	16.03	0:40:12	23.9	0:41:14	23.3	0:42:47	22.5

	Route 8 Northbound	Distance	AM Peak Time	AM Peak Speed	Midday Time	Midday Speed	PM Peak Time	PM Peak Speed
5	2nd/Washington (J. London Sq.)							
		0.16	0:00:58	9.9	0:01:02	9.3	0:01:02	9.3
	3rd/Broadway							
		0.23	0:01:12	11.5	0:01:19	10.5	0:01:19	10.5
	7th/Broadway							
		0.35	0:02:03	10.2	0:02:18	9.1	0:02:18	9.1
4	12th Street BART							
		0.4	0:02:15	10.7	0:02:32	9.5	0:02:32	9.5
3	19th Street BART							
		11.05	0:16:12	40.9	0:17:09	38.7	0:21:56	30.2
2	Richmond West P&R							
		0.25	0:01:34	9.6	0:01:34	9.6	0:01:51	8.1
	Maine Ave							
		0.56	0:03:03	11.0	0:03:03	11.0	0:03:42	9.1
	MacDonald Ave							
		0.26	0:01:37	9.6	0:01:37	9.6	0:01:54	8.2
	Roosevelt Ave							
		0.75	0:02:28	18.2	0:02:28	18.2	0:02:28	18.2
	Rheem Ave							
		0.63	0:02:09	17.6	0:02:09	17.6	0:02:09	17.6
	Market Ave							
		0.45	0:01:40	16.2	0:01:40	16.2	0:01:40	16.2
	Road 20							
		0.55	0:01:56	17.1	0:01:56	17.1	0:01:56	17.1
	Broadway							
		0.33	0:01:36	12.4	0:01:36	12.4	0:01:36	12.4
1	Contra Costa College							
	Total	15.97	0:38:43	24.8	0:40:23	23.8	0:46:23	20.7

Appendix B
Route Schedules

Route 1 — Hercules TC, Richmond TC Berkeley

Southbound

1	2	3	4	5	
Hercules Transit Center	Richmond Pkwy Transit Center	Gilman / 6th	Downtown Berkeley BART	Shattuck / Dwight Way	Total
Mileage	4.3	8.8	2.6	0.5	**16.2**
AM	11.0	18.0	12.0	3.0	**44.0**
Speed:	**22.7**	**30.0**	**13.3**	**11.1**	*22.1*
Midday	10.0	15.0	13.0	3.0	**41.0**
Speed:	**26.1**	**35.2**	**11.7**	**10.0**	*23.7*
PM	11.0	15.0	14.0	3.0	**43.0**
Speed:	**23.5**	**35.2**	**10.7**	**9.4**	*22.6*

Northbound

5	4	3	2	1	
Shattuck / Dwight Way	Downtown Berkeley BART	Gilman / 6th	Richmond Pkwy Transit Center	Hercules Transit Center	Total
Mileage	0.45	2.6	8.7	4.1	**15.9**
AM	3.0	12.0	22.0	10.0	**47.0**
Speed:	**9.9**	**13.7**	**24.2**	**25.2**	*20.3*
Midday	3.0	13.0	13.0	9.0	**38.0**
Speed:	**9.1**	**12.0**	**39.1**	**28.8**	*25.1*
PM	3.0	14.0	18.0	10.0	**45.0**
Speed:	**8.6**	**10.9**	**28.7**	**25.2**	*21.2*

All-Day Schedule (15-minute peak service)

Block	Period	DH-PO	1	2	3	4	5	LO	DH to 1	Return to 1	DH-PI
1-1	AM	0:07	5:00 AM	5:11 AM	5:29 AM	5:41 AM	5:44 AM		0:27	6:11	
1-2	AM	0:07	5:30 AM	5:41 AM	5:59 AM	6:11 AM	6:14 AM		0:27	6:41	
1-3	AM	0:07	6:00 AM	6:11 AM	6:29 AM	6:41 AM	6:44 AM		0:27	7:11	
1-1	AM		6:30 AM	6:41 AM	6:59 AM	7:11 AM	7:14 AM		0:27	7:41	
1-4	AM	0:07	6:45 AM	6:56 AM	7:14 AM	7:26 AM	7:29 AM		0:27	7:56	
1-2	AM		7:00 AM	7:11 AM	7:29 AM	7:41 AM	7:44 AM		0:27	8:11	
1-5	AM	0:07	7:15 AM	7:26 AM	7:44 AM	7:56 AM	7:59 AM				0:25
1-3	AM		7:30 AM	7:41 AM	7:59 AM	8:11 AM	8:14 AM		0:27	8:41	
1-6	AM	0:07	7:45 AM	7:56 AM	8:14 AM	8:26 AM	8:29 AM				0:25
1-1	AM		8:00 AM	8:11 AM	8:29 AM	8:41 AM	8:44 AM	0:16			
1-4	AM		8:15 AM	8:26 AM	8:44 AM	8:56 AM	8:59 AM				0:25
1-2	AM		8:30 AM	8:41 AM	8:59 AM	9:11 AM	9:14 AM				0:25
1-3	AM		9:00 AM	9:11 AM	9:29 AM	9:41 AM	9:44 AM				0:25
1-1	Midday		10:00 AM	10:10 AM	10:25 AM	10:38 AM	10:41 AM	0:19			
1-1	Midday		**12:00 PM**	**12:10 PM**	**12:25 PM**	**12:38 PM**	**12:41 PM**	0:19			
1-1	Midday		**2:00 PM**	**2:10 PM**	**2:25 PM**	**2:38 PM**	**2:41 PM**	0:19			

Block	Period	DH-PO	5	4	3	2	1	LO	DH to 5	Return to 5	DH-PI
1-1	Midday		9:00 AM	9:03 AM	9:16 AM	9:29 AM	9:38 AM	0:22			
1-1	Midday		11:00 AM	11:03 AM	11:16 AM	11:29 AM	11:38 AM	0:22			
1-1	Midday		**1:00 PM**	**1:03 PM**	**1:16 PM**	**1:29 PM**	**1:38 PM**	0:22			
1-1	Midday		**3:00 PM**	**3:03 PM**	**3:16 PM**	**3:29 PM**	**3:38 PM**		0:27	**4:05 PM**	
1-2	PM	0:25	**3:30 PM**	**3:33 PM**	**3:47 PM**	**4:05 PM**	**4:15 PM**		0:27	**4:42 PM**	
1-3	PM	0:25	**4:00 PM**	**4:03 PM**	**4:17 PM**	**4:35 PM**	**4:45 PM**		0:27	**5:12 PM**	
1-1	PM		**4:15 PM**	**4:18 PM**	**4:32 PM**	**4:50 PM**	**5:00 PM**		0:27	**5:27 PM**	
1-4	PM	0:25	**4:30 PM**	**4:33 PM**	**4:47 PM**	**5:05 PM**	**5:15 PM**		0:27	**5:42 PM**	
1-5	PM	0:25	**4:45 PM**	**4:48 PM**	**5:02 PM**	**5:20 PM**	**5:30 PM**				0:07
1-2	PM		**5:00 PM**	**5:03 PM**	**5:17 PM**	**5:35 PM**	**5:45 PM**		0:27	**6:12 PM**	
1-6	PM	0:25	**5:15 PM**	**5:18 PM**	**5:32 PM**	**5:50 PM**	**6:00 PM**				0:07
1-3	PM		**5:30 PM**	**5:33 PM**	**5:47 PM**	**6:05 PM**	**6:15 PM**		0:27	**6:42 PM**	
1-1	PM		**5:45 PM**	**5:48 PM**	**6:02 PM**	**6:20 PM**	**6:30 PM**				0:07
1-4	PM		**6:00 PM**	**6:03 PM**	**6:17 PM**	**6:35 PM**	**6:45 PM**				0:07
1-2	PM		**6:30 PM**	**6:33 PM**	**6:47 PM**	**7:05 PM**	**7:15 PM**				0:07
1-3	PM		**7:00 PM**	**7:03 PM**	**7:17 PM**	**7:35 PM**	**7:45 PM**				0:07

Summary of Service

Block	Hrs.	Hrs.	Miles
1-1	0.56	13.50	192.5
1-2	0.31	7.48	96.2
1-3	0.31	7.48	96.2
1-4	0.19	4.48	64.2
1-5	0.06	1.48	32.1
1-6	0.06	1.48	32.1
Rev.		**35.92**	**513.28**
DH		**11.87**	**405.00**
Total		**47.78**	**918.28**

Peak Period Only Schedule

Block	Period	DH-PO	1	2	3	4	5	LO	DH to 1	Return to 1	DH-PI
1-1	AM	0:07	5:00 AM	5:11 AM	5:29 AM	5:41 AM	5:44 AM		0:27	6:11	
1-2	AM	0:07	5:30 AM	5:41 AM	5:59 AM	6:11 AM	6:14 AM		0:27	6:41	
1-3	AM	0:07	6:00 AM	6:11 AM	6:29 AM	6:41 AM	6:44 AM		0:27	7:11	
1-1	AM	0:07	6:30 AM	6:41 AM	6:59 AM	7:11 AM	7:14 AM		0:27	7:41	
1-4	AM	0:07	6:45 AM	6:56 AM	7:14 AM	7:26 AM	7:29 AM		0:27	7:56	
1-2	AM	0:07	7:00 AM	7:11 AM	7:29 AM	7:41 AM	7:44 AM		0:27	8:11	
1-5	AM		7:15 AM	7:26 AM	7:44 AM	7:56 AM	7:59 AM				0:25
1-3	AM		7:30 AM	7:41 AM	7:59 AM	8:11 AM	8:14 AM		0:27	8:41	
1-6	AM		7:45 AM	7:56 AM	8:14 AM	8:26 AM	8:29 AM				0:25
1-1	AM		8:00 AM	8:11 AM	8:29 AM	8:41 AM	8:44 AM				0:25
1-4	AM		8:15 AM	8:26 AM	8:44 AM	8:56 AM	8:59 AM				0:25
1-2	AM		8:30 AM	8:41 AM	8:59 AM	9:11 AM	9:14 AM				0:25
1-3	AM		9:00 AM	9:11 AM	9:29 AM	9:41 AM	9:44 AM				0:25

Block	Period	DH-PO	5	4	3	2	1	LO	DH to 5	Return to 5	DH-PI
1-1	Midday	0:25	3:00 PM	3:03 PM	3:16 PM	3:29 PM	3:38 PM		0:27	4:05 PM	
1-2	PM	0:25	3:30 PM	3:33 PM	3:47 PM	4:05 PM	4:15 PM		0:27	4:42 PM	
1-3	PM	0:25	4:00 PM	4:03 PM	4:17 PM	4:35 PM	4:45 PM		0:27	5:12 PM	
1-1	PM		4:15 PM	4:18 PM	4:32 PM	4:50 PM	5:00 PM		0:27	5:27 PM	
1-4	PM	0:25	4:30 PM	4:33 PM	4:47 PM	5:05 PM	5:15 PM		0:27	5:42 PM	
1-5	PM	0:25	4:45 PM	4:48 PM	5:02 PM	5:20 PM	5:30 PM				0:07
1-2	PM		5:00 PM	5:03 PM	5:17 PM	5:35 PM	5:45 PM		0:27	6:12 PM	
1-6	PM	0:25	5:15 PM	5:18 PM	5:32 PM	5:50 PM	6:00 PM				0:07
1-3	PM		5:30 PM	5:33 PM	5:47 PM	6:05 PM	6:15 PM		0:27	6:42 PM	
1-1	PM		5:45 PM	5:48 PM	6:02 PM	6:20 PM	6:30 PM				0:07
1-4	PM		6:00 PM	6:03 PM	6:17 PM	6:35 PM	6:45 PM				0:07
1-2	PM		6:30 PM	6:33 PM	6:47 PM	7:05 PM	7:15 PM				0:07
1-3	PM		7:00 PM	7:03 PM	7:17 PM	7:35 PM	7:45 PM				0:07

Summary of Service

Block	Hrs.	Hrs.	Miles
1-1	0.30	7.23	96.2
1-2	0.31	7.48	96.2
1-3	0.31	7.48	96.2
1-4	0.19	4.48	64.2
1-5	0.06	1.48	32.1
1-6	0.06	1.48	32.1
Rev.		**29.65**	**417.04**
DH		**12.70**	**434.00**
Total		**42.35**	**851.04**

Route 2 **Hercules TC, Richmond TC**
Oakland & Jack London Sq.

Southbound

1	2	3	4	5	6	7	
Hercules Transit Center	Richmond Pkwy Transit Center	65th/Hollis	MacArther BART	19th St. BART	12th St. BART	2nd/Washington (J. London Sq.)	Total
Mileage	4.3	11.6	2.3	2.0	0.4	0.7	**21.2**
AM	11.0	25.0	11.0	8.0	2.0	4.0	**61.0**
Speed:	**22.7**	**28.2**	**12.2**	**15.1**	**10.7**	**9.8**	*20.9*
Midday	10.0	19.0	12.0	8.0	2.0	4.0	**55.0**
Speed:	**26.1**	**37.1**	**11.5**	**14.3**	**10.7**	**9.8**	*23.1*
PM	11.0	22.0	12.0	8.0	2.0	4.0	**59.0**
Speed:	**23.5**	**31.8**	**10.8**	**14.3**	**10.7**	**9.8**	*21.6*

Northbound

5	4			3	2	1	
2nd/Washington (J. London Sq.)	12th St. BART	19th St. BART	MacArther BART	65th/Hollis	Richmond Pkwy Transit Center	Hercules Transit Center	Total
Mileage	0.74	0.4	1.96	2.3	11.3	4.1	**20.8**
AM	5.0	3.0	8.0	11.0	26.0	10.0	**63.0**
Speed:	**9.1**	**9.5**	**15.1**	**12.5**	**25.6**	**25.2**	*19.8*
Midday	5.0	3.0	8.0	12.0	20.0	9.0	**57.0**
Speed:	**9.1**	**9.5**	**14.3**	**11.8**	**34.4**	**28.8**	*21.9*
PM	5.0	3.0	8.0	13.0	24.0	10.0	**63.0**
Speed:	**9.1**	**9.5**	**14.3**	**11.1**	**28.1**	**25.2**	*19.8*

All-Day Schedule (15-minute peak service)

Block	Period	DH-PO	1	2	3	4	5	6	7	LO	DH to 1	Ret to 1	DH-PI
2-1	AM	0:07	5:00 AM	5:11 AM	5:36 AM	5:47 AM	5:55 AM	5:57 AM	6:01 AM		0:36	6:37 AM	
2-2	AM	0:07	5:30 AM	5:41 AM	6:06 AM	6:17 AM	6:25 AM	6:27 AM	6:31 AM		0:36	7:07 AM	
2-3	AM	0:07	6:00 AM	6:11 AM	6:36 AM	6:47 AM	6:55 AM	6:57 AM	7:01 AM		0:36	7:37 AM	
2-4	AM	0:07	6:30 AM	6:41 AM	7:06 AM	7:17 AM	7:25 AM	7:27 AM	7:31 AM		0:36	8:07 AM	
2-5	AM	0:07	6:45 AM	6:56 AM	7:21 AM	7:32 AM	7:40 AM	7:42 AM	7:46 AM				0:31
2-1	AM		7:00 AM	7:11 AM	7:36 AM	7:47 AM	7:55 AM	7:57 AM	8:01 AM		0:36	8:37 AM	
2-6	AM	0:07	7:15 AM	7:26 AM	7:51 AM	8:02 AM	8:10 AM	8:12 AM	8:16 AM		0:36	8:52 AM	
2-2	AM		7:30 AM	7:41 AM	8:06 AM	8:17 AM	8:25 AM	8:27 AM	8:31 AM				0:31
2-7	AM	0:07	7:45 AM	7:56 AM	8:21 AM	8:32 AM	8:40 AM	8:42 AM	8:46 AM				0:31
2-3	AM		8:00 AM	8:11 AM	8:36 AM	8:47 AM	8:55 AM	8:57 AM	9:01 AM				0:31
2-8	AM	0:07	8:15 AM	8:26 AM	8:51 AM	9:02 AM	9:10 AM	9:12 AM	9:16 AM				0:31
2-4	AM		8:30 AM	8:41 AM	9:06 AM	9:17 AM	9:25 AM	9:27 AM	9:31 AM				0:31
2-6	AM		9:00 AM	9:11 AM	9:36 AM	9:47 AM	9:55 AM	9:57 AM	10:01 AM				0:31
2-1	Midday		10:15 AM	10:25 AM	10:44 AM	10:56 AM	11:04 AM	11:06 AM	11:10 AM	0:20			
2-1	Midday		**12:45 PM**	**12:55 PM**	**1:14 PM**	**1:26 PM**	**1:34 PM**	**1:36 PM**	**1:40 PM**	0:20			
2-1	Midday		**3:15 PM**	**3:25 PM**	**3:44 PM**	**3:56 PM**	**4:04 PM**	**4:06 PM**	**4:10 PM**	0:20			

Block	Period	DH-PO	7	6	5	4	3	2	1	LO	DH to 5	Ret to 5	DH-PI
2-1	Midday		9:00 AM	9:05 AM	9:08 AM	9:16 AM	9:28 AM	9:48 AM	9:57 AM	0:18			
2-1	Midday		11:30 AM	11:35 AM	11:38 AM	11:46 AM	11:58 AM	**12:18 PM**	**12:27 PM**	0:18			
2-1	Midday		**2:00 PM**	**2:05 PM**	**2:08 PM**	**2:16 PM**	**2:28 PM**	**2:48 PM**	**2:57 PM**	0:18			
2-2	Midday	0:31	**3:00 PM**	**3:05 PM**	**3:08 PM**	**3:16 PM**	**3:28 PM**	**3:48 PM**	**3:57 PM**		0:36	**4:33 PM**	
2-3	PM	0:31	**3:30 PM**	**3:35 PM**	**3:38 PM**	**3:46 PM**	**3:59 PM**	**4:23 PM**	**4:33 PM**		0:36	**5:09 PM**	
2-4	PM	0:31	**4:00 PM**	**4:05 PM**	**4:08 PM**	**4:16 PM**	**4:29 PM**	**4:53 PM**	**5:03 PM**		0:36	**5:39 PM**	
2-5	PM	0:31	**4:15 PM**	**4:20 PM**	**4:23 PM**	**4:31 PM**	**4:44 PM**	**5:08 PM**	**5:18 PM**				0:07
2-1	PM		**4:30 PM**	**4:35 PM**	**4:38 PM**	**4:46 PM**	**4:59 PM**	**5:23 PM**	**5:33 PM**		0:36	**6:09 PM**	
2-2	PM		**4:45 PM**	**4:50 PM**	**4:53 PM**	**5:01 PM**	**5:14 PM**	**5:38 PM**	**5:48 PM**				0:07
2-6	PM	0:31	**5:00 PM**	**5:05 PM**	**5:08 PM**	**5:16 PM**	**5:29 PM**	**5:53 PM**	**6:03 PM**				0:07
2-3	PM		**5:15 PM**	**5:20 PM**	**5:23 PM**	**5:31 PM**	**5:44 PM**	**6:08 PM**	**6:18 PM**		0:36	**6:54 PM**	
2-7	PM	0:31	**5:30 PM**	**5:35 PM**	**5:38 PM**	**5:46 PM**	**5:59 PM**	**6:23 PM**	**6:33 PM**				0:07
2-8	PM	0:31	**5:45 PM**	**5:50 PM**	**5:53 PM**	**6:01 PM**	**6:14 PM**	**6:38 PM**	**6:48 PM**				0:07
2-4	PM		**6:00 PM**	**6:05 PM**	**6:08 PM**	**6:16 PM**	**6:29 PM**	**6:53 PM**	**7:03 PM**				0:07
2-1	PM		**6:30 PM**	**6:35 PM**	**6:38 PM**	**6:46 PM**	**6:59 PM**	**7:23 PM**	**7:33 PM**				0:07
2-3	PM		**7:00 PM**	**7:05 PM**	**7:08 PM**	**7:16 PM**	**7:29 PM**	**7:53 PM**	**8:03 PM**				0:07

Summary of Service

Block	Hrs.	Hrs.	Miles
2-1	0.61	14.55	210.0
2-2	0.23	5.63	84.0
2-3	0.32	7.57	104.8
2-4	0.25	6.07	84.0
2-5	0.09	2.07	42.0
2-6	0.09	2.07	63.2
2-7	0.09	2.07	42.0
2-8	0.09	2.07	42.0
Rev.		**42.08**	**671.84**
DH		**15.70**	**531.00**
Total		**57.78**	**1202.84**

Peak Period Only Schedule

Block	Period	DH-PO	1	2	3	4	5	6	7	LO	DH to 1	Ret to 1	DH-PI
2-1	AM	0:07	5:00 AM	5:11 AM	5:36 AM	5:47 AM	5:55 AM	5:57 AM	6:01 AM		0:36	6:37 AM	
2-2	AM	0:07	5:30 AM	5:41 AM	6:06 AM	6:17 AM	6:25 AM	6:27 AM	6:31 AM		0:36	7:07 AM	
2-3	AM	0:07	6:00 AM	6:11 AM	6:36 AM	6:47 AM	6:55 AM	6:57 AM	7:01 AM		0:36	7:37 AM	
2-4	AM	0:07	6:30 AM	6:41 AM	7:06 AM	7:17 AM	7:25 AM	7:27 AM	7:31 AM		0:36	8:07 AM	
2-5	AM	0:07	6:45 AM	6:56 AM	7:21 AM	7:32 AM	7:40 AM	7:42 AM	7:46 AM				0:31
2-1	AM		7:00 AM	7:11 AM	7:36 AM	7:47 AM	7:55 AM	7:57 AM	8:01 AM				0:31
2-6	AM	0:07	7:15 AM	7:26 AM	7:51 AM	8:02 AM	8:10 AM	8:12 AM	8:16 AM		0:36	8:52 AM	
2-2	AM		7:30 AM	7:41 AM	8:06 AM	8:17 AM	8:25 AM	8:27 AM	8:31 AM				0:31
2-7	AM	0:07	7:45 AM	7:56 AM	8:21 AM	8:32 AM	8:40 AM	8:42 AM	8:46 AM				0:31
2-3	AM		8:00 AM	8:11 AM	8:36 AM	8:47 AM	8:55 AM	8:57 AM	9:01 AM				0:31
2-8	AM	0:07	8:15 AM	8:26 AM	8:51 AM	9:02 AM	9:10 AM	9:12 AM	9:16 AM				0:31
2-4	AM		8:30 AM	8:41 AM	9:06 AM	9:17 AM	9:25 AM	9:27 AM	9:31 AM				0:31
2-6	AM		9:00 AM	9:11 AM	9:36 AM	9:47 AM	9:55 AM	9:57 AM	10:01 AM				0:31

Block	Period	DH-PO	7	6	5	4	3	2	1	LO	DH to 5	Ret to 5	DH-PI
2-2	Midday	0:31	3:00 PM	3:05 PM	3:08 PM	3:16 PM	3:28 PM	3:48 PM	3:57 PM		0:36	4:33 PM	
2-3	PM	0:31	3:30 PM	3:35 PM	3:38 PM	3:46 PM	3:59 PM	4:23 PM	4:33 PM		0:36	5:09 PM	
2-4	PM	0:31	4:00 PM	4:05 PM	4:08 PM	4:16 PM	4:29 PM	4:53 PM	5:03 PM		0:36	5:39 PM	
2-5	PM	0:31	4:15 PM	4:20 PM	4:23 PM	4:31 PM	4:44 PM	5:08 PM	5:18 PM				0:07
2-1	PM	0:31	4:30 PM	4:35 PM	4:38 PM	4:46 PM	4:59 PM	5:23 PM	5:33 PM		0:36	6:09 PM	
2-2	PM		4:45 PM	4:50 PM	4:53 PM	5:01 PM	5:14 PM	5:38 PM	5:48 PM				0:07
2-6	PM	0:31	5:00 PM	5:05 PM	5:08 PM	5:16 PM	5:29 PM	5:53 PM	6:03 PM				0:07
2-3	PM		5:15 PM	5:20 PM	5:23 PM	5:31 PM	5:44 PM	6:08 PM	6:18 PM		0:36	6:54 PM	
2-7	PM	0:31	5:30 PM	5:35 PM	5:38 PM	5:46 PM	5:59 PM	6:23 PM	6:33 PM				0:07
2-8	PM	0:31	5:45 PM	5:50 PM	5:53 PM	6:01 PM	6:14 PM	6:38 PM	6:48 PM				0:07
2-4	PM		6:00 PM	6:05 PM	6:08 PM	6:16 PM	6:29 PM	6:53 PM	7:03 PM				0:07
2-1	PM		6:30 PM	6:35 PM	6:38 PM	6:46 PM	6:59 PM	7:23 PM	7:33 PM				0:07
2-3	PM		7:00 PM	7:05 PM	7:08 PM	7:16 PM	7:29 PM	7:53 PM	8:03 PM				0:07

Summary of Service

Block	Hrs.	Hrs.	Miles
2-1	0.25	6.07	84.0
2-2	0.24	5.82	84.0
2-3	0.32	7.57	104.8
2-4	0.25	6.07	84.0
2-5	0.09	2.07	42.0
2-6	0.16	3.82	63.2
2-7	0.09	2.07	42.0
2-8	0.09	2.07	42.0
Rev.		**35.53**	**545.87**
DH		**15.90**	**540.00**
Total		**51.43**	**1085.87**

Route 2A

Hercules TC, Richmond TC MacArthur/Broadway

Southbound

1	2	3	4	5	
Hercules Transit Center	Richmond Pkwy Transit Center	65th/Hollis	MacArther BART	MacArthur/ Broadway	Total
Mileage	4.3	11.6	2.3	0.8	**18.9**
AM	11.0	25.0	11.0	3.0	**50.0**
Speed:	**22.7**	**28.2**	**12.3**	**15.2**	*22.7*
Midday	10.0	19.0	12.0	4.0	**45.0**
Speed:	**26.1**	**37.1**	**11.5**	**13.4**	*25.2*
PM	11.0	22.0	12.0	4.0	**49.0**
Speed:	**23.5**	**31.8**	**10.8**	**13.4**	*23.2*

Northbound

5	4	3	2	1	
MacArthur/ Broadway	MacArther BART	65th/Hollis	Richmond Pkwy Transit Center	Hercules Transit Center	Total
Mileage	0.76	2.3	11.3	4.1	**18.5**
AM	3.0	11.0	26.0	10.0	**50.0**
Speed:	**14.0**	**12.5**	**25.6**	**25.2**	*22.1*
Midday	4.0	12.0	20.0	9.0	**45.0**
Speed:	**12.4**	**11.8**	**34.4**	**28.8**	*24.6*
PM	4.0	16.0	24.0	10.0	**54.0**
Speed:	**12.4**	**8.8**	**28.1**	**25.2**	*20.5*

All-Day Schedule (15-minute peak service)

Block	Period	DH-PO	1	2	3	4	5	LO	DH to 1	Ret to 1	DH-PI
2A-1	AM	0:07	5:00 AM	5:11 AM	5:36 AM	5:47 AM	5:50 AM		0:32	6:22 AM	
2A-2	AM	0:07	5:30 AM	5:41 AM	6:06 AM	6:17 AM	6:20 AM		0:32	6:52 AM	
2A-3	AM	0:07	6:00 AM	6:11 AM	6:36 AM	6:47 AM	6:50 AM		0:32	7:22 AM	
2A-4	AM	0:07	6:30 AM	6:41 AM	7:06 AM	7:17 AM	7:20 AM		0:32	7:52 AM	
2A-1	AM	0:07	6:45 AM	6:56 AM	7:21 AM	7:32 AM	7:35 AM		0:32	8:07 AM	
2A-5	AM		7:00 AM	7:11 AM	7:36 AM	7:47 AM	7:50 AM				0:29
2A-2	AM	0:07	7:15 AM	7:26 AM	7:51 AM	8:02 AM	8:05 AM		0:32	8:37 AM	
2A-6	AM		7:30 AM	7:41 AM	8:06 AM	8:17 AM	8:20 AM				0:29
2A-3	AM	0:07	7:45 AM	7:56 AM	8:21 AM	8:32 AM	8:35 AM				
2A-7	AM		8:00 AM	8:11 AM	8:36 AM	8:47 AM	8:50 AM				0:29
2A-4	AM	0:07	8:15 AM	8:26 AM	8:51 AM	9:02 AM	9:05 AM				0:29
2A-1	AM		8:30 AM	8:41 AM	9:06 AM	9:17 AM	9:20 AM				0:29
2A-2	AM		9:00 AM	9:11 AM	9:36 AM	9:47 AM	9:50 AM				0:29
2A-3	Midday		10:00 AM	10:10 AM	10:29 AM	10:41 AM	10:45 AM	0:15			
2A-3	Midday		**12:00 PM**	**12:10 PM**	**12:29 PM**	**12:41 PM**	**12:45 PM**	0:15			
2A-3	Midday		**2:00 PM**	**2:10 PM**	**2:29 PM**	**2:41 PM**	**2:45 PM**	0:15			

Block	Period	DH-PO	5	4	3	2	1	LO	DH to 5	Ret to 5	DH-PI
2A-3	Midday		9:00 AM	9:04 AM	9:16 AM	9:36 AM	9:45 AM	0:15			
2A-3	Midday		11:00 AM	11:04 AM	11:16 AM	11:36 AM	11:45 AM	0:15			
2A-3	Midday		**1:00 PM**	**1:04 PM**	**1:16 PM**	**1:36 PM**	**1:45 PM**	0:15			
2A-3	Midday		**3:00 PM**	**3:04 PM**	**3:16 PM**	**3:36 PM**	**3:45 PM**		0:32	**4:17 PM**	
2A-1	PM	0:29	**3:30 PM**	**3:34 PM**	**3:50 PM**	**4:14 PM**	**4:24 PM**		0:32	**4:56 PM**	
2A-2	PM	0:29	**4:00 PM**	**4:04 PM**	**4:20 PM**	**4:44 PM**	**4:54 PM**		0:32	**5:26 PM**	
2A-4	PM	0:29	**4:15 PM**	**4:19 PM**	**4:35 PM**	**4:59 PM**	**5:09 PM**		0:32	**5:41 PM**	
2A-3	PM		**4:30 PM**	**4:34 PM**	**4:50 PM**	**5:14 PM**	**5:24 PM**				0:07
2A-5	PM	0:29	**4:45 PM**	**4:49 PM**	**5:05 PM**	**5:29 PM**	**5:39 PM**		0:32	**6:11 PM**	
2A-6	PM	0:29	**5:00 PM**	**5:04 PM**	**5:20 PM**	**5:44 PM**	**5:54 PM**				0:07
2A-1	PM		**5:15 PM**	**5:19 PM**	**5:35 PM**	**5:59 PM**	**6:09 PM**		0:32	**6:41 PM**	
2A-7	PM	0:29	**5:30 PM**	**5:34 PM**	**5:50 PM**	**6:14 PM**	**6:24 PM**				0:07
2A-2	PM		**5:45 PM**	**5:49 PM**	**6:05 PM**	**6:29 PM**	**6:39 PM**				0:07
2A-4	PM		**6:00 PM**	**6:04 PM**	**6:20 PM**	**6:44 PM**	**6:54 PM**				0:07
2A-5	PM		**6:30 PM**	**6:34 PM**	**6:50 PM**	**7:14 PM**	**7:24 PM**				0:07
2A-1	PM		**7:00 PM**	**7:04 PM**	**7:20 PM**	**7:44 PM**	**7:54 PM**				0:07

Summary of Service

Block	Hrs.	Hrs.	Miles
2A-1	0.36	8.73	112.1
2A-2	0.29	6.98	93.7
2A-3	0.48	11.40	186.9
2A-4	0.22	5.23	74.8
2A-5	0.15	3.48	55.8
2A-6	0.07	1.73	37.4
2A-7	0.07	1.73	37.4
Rev.		**39.30**	**598.08**
DH		**13.95**	**473.40**
Total		**53.25**	**1071.48**

Peak Period Only Schedule

Block	Period	DH-PO	1	2	3	4	5	LO	DH to 1	Ret to 1	DH-PI
2A-1	AM	0:07	5:00 AM	5:11 AM	5:36 AM	5:47 AM	5:50 AM		0:32	6:22 AM	
2A-2	AM	0:07	5:30 AM	5:41 AM	6:06 AM	6:17 AM	6:20 AM		0:32	6:52 AM	
2A-3	AM	0:07	6:00 AM	6:11 AM	6:36 AM	6:47 AM	6:50 AM		0:32	7:22 AM	
2A-4	AM	0:07	6:30 AM	6:41 AM	7:06 AM	7:17 AM	7:20 AM		0:32	7:52 AM	
2A-1	AM	0:07	6:45 AM	6:56 AM	7:21 AM	7:32 AM	7:35 AM		0:32	8:07 AM	
2A-5	AM		7:00 AM	7:11 AM	7:36 AM	7:47 AM	7:50 AM				0:29
2A-2	AM	0:07	7:15 AM	7:26 AM	7:51 AM	8:02 AM	8:05 AM		0:32	8:37 AM	
2A-6	AM		7:30 AM	7:41 AM	8:06 AM	8:17 AM	8:20 AM				0:29
2A-3	AM	0:07	7:45 AM	7:56 AM	8:21 AM	8:32 AM	8:35 AM				0:29
2A-7	AM		8:00 AM	8:11 AM	8:36 AM	8:47 AM	8:50 AM				0:29
2A-4	AM	0:07	8:15 AM	8:26 AM	8:51 AM	9:02 AM	9:05 AM				0:29
2A-1	AM		8:30 AM	8:41 AM	9:06 AM	9:17 AM	9:20 AM				0:29
2A-2	AM		9:00 AM	9:11 AM	9:36 AM	9:47 AM	9:50 AM				0:29

Block	Period	DH-PO	5	4	3	2	1	LO	DH to 5	Ret to 5	DH-PI
2A-3	Midday	0:29	3:00 PM	3:04 PM	3:16 PM	3:36 PM	3:45 PM		0:32	4:17 PM	
2A-1	PM	0:29	3:30 PM	3:34 PM	3:50 PM	4:14 PM	4:24 PM		0:32	4:56 PM	
2A-2	PM	0:29	4:00 PM	4:04 PM	4:20 PM	4:44 PM	4:54 PM		0:32	5:26 PM	
2A-4	PM	0:29	4:15 PM	4:19 PM	4:35 PM	4:59 PM	5:09 PM		0:32	5:41 PM	
2A-3	PM		4:30 PM	4:34 PM	4:50 PM	5:14 PM	5:24 PM				0:07
2A-5	PM	0:29	4:45 PM	4:49 PM	5:05 PM	5:29 PM	5:39 PM		0:32	6:11 PM	
2A-6	PM	0:29	5:00 PM	5:04 PM	5:20 PM	5:44 PM	5:54 PM				0:07
2A-1	PM		5:15 PM	5:19 PM	5:35 PM	5:59 PM	6:09 PM		0:32	6:41 PM	
2A-7	PM	0:29	5:30 PM	5:34 PM	5:50 PM	6:14 PM	6:24 PM				0:07
2A-2	PM		5:45 PM	5:49 PM	6:05 PM	6:29 PM	6:39 PM				0:07
2A-4	PM		6:00 PM	6:04 PM	6:20 PM	6:44 PM	6:54 PM				0:07
2A-5	PM		6:30 PM	6:34 PM	6:50 PM	7:14 PM	7:24 PM				0:07
2A-1	PM		7:00 PM	7:04 PM	7:20 PM	7:44 PM	7:54 PM				0:07

Summary of Service

Block	Hrs.	Hrs.	Miles
2A-1	0.36	8.73	112.1
2A-2	0.29	6.98	93.7
2A-3	0.21	4.98	74.8
2A-4	0.22	5.23	74.8
2A-5	0.15	3.48	55.8
2A-6	0.07	1.73	37.4
2A-7	0.07	1.73	37.4
Rev.		**32.88**	**485.94**
DH		**14.92**	**507.80**
Total		**47.80**	**993.74**

Route 2B

Hercules TC, Richmond TC
Jack London Sq.

Southbound

1	2	3	4	5	
Hercules Transit Center	Richmond Pkwy Transit Center	19th St. BART	12th St. BART	2nd/Washington (J. London Sq.)	Total
Mileage	4.3	14.5	0.4	0.7	**19.9**
AM	11.0	30.0	2.0	4.0	**47.0**
Speed:	**22.7**	**28.8**	**10.7**	**9.6**	*25.4*
Midday	10.0	27.0	3.0	4.0	**44.0**
Speed:	**26.1**	**32.6**	**9.5**	**8.7**	*27.1*
PM	11.0	27.0	3.0	4.0	**45.0**
Speed:	**23.5**	**32.6**	**9.5**	**8.7**	*26.5*

Northbound

5	4	3	2	1	
2nd/Washington (J. London Sq.)	12th St. BART	19th St. BART	Richmond Pkwy Transit Center	Hercules Transit Center	Total
Mileage	0.74	0.4	14.4	4.1	**19.7**
AM	5.0	3.0	33.0	10.0	**51.0**
Speed:	**9.1**	**9.5**	**26.2**	**25.2**	*23.1*
Midday	5.0	3.0	28.0	9.0	**45.0**
Speed:	**9.1**	**9.5**	**31.2**	**28.8**	*26.2*
PM	6.0	3.0	31.0	10.0	**50.0**
Speed:	**7.7**	**8.0**	**27.5**	**25.2**	*23.6*

All-Day Schedule (15-minute peak service)

Block	Period	DH-PO	1	2	5	6	7	LO	DH to 1	Ret to 1	DH-PI
2B-1	AM	0:07	5:00 AM	5:11 AM	5:41 AM	5:43 AM	5:47 AM		0:34	6:21 AM	
2B-2	AM	0:07	5:30 AM	5:41 AM	6:11 AM	6:13 AM	6:17 AM		0:34	6:51 AM	
2B-3	AM	0:07	6:00 AM	6:11 AM	6:41 AM	6:43 AM	6:47 AM		0:34	7:21 AM	
2B-4	AM	0:07	6:30 AM	6:41 AM	7:11 AM	7:13 AM	7:17 AM		0:34	7:51 AM	
2B-1	AM	0:07	6:45 AM	6:56 AM	7:26 AM	7:28 AM	7:32 AM		0:34	8:06 AM	0:31
2B-5	AM		7:00 AM	7:11 AM	7:41 AM	7:43 AM	7:47 AM				
2B-2	AM	0:07	7:15 AM	7:26 AM	7:56 AM	7:58 AM	8:02 AM		0:34	8:36 AM	
2B-6	AM		7:30 AM	7:41 AM	8:11 AM	8:13 AM	8:17 AM				0:31
2B-3	AM	0:07	7:45 AM	7:56 AM	8:26 AM	8:28 AM	8:32 AM				0:31
2B-7	AM		8:00 AM	8:11 AM	8:41 AM	8:43 AM	8:47 AM	0:13			
2B-4	AM	0:07	8:15 AM	8:26 AM	8:56 AM	8:58 AM	9:02 AM				0:31
2B-1	AM		8:30 AM	8:41 AM	9:11 AM	9:13 AM	9:17 AM				0:31
2B-2	AM		9:00 AM	9:11 AM	9:41 AM	9:43 AM	9:47 AM				0:31
2B-7	Midday		10:00 AM	10:10 AM	10:37 AM	10:40 AM	10:44 AM	0:16			
2B-7	Midday		**12:00 PM**	**12:10 PM**	**12:37 PM**	**12:40 PM**	**12:44 PM**	0:16			
2B-7	Midday		**2:00 PM**	**2:10 PM**	**2:37 PM**	**2:40 PM**	**2:44 PM**	0:16			

Block	Period	DH-PO	7	6	5	2	1	LO	DH to 5	Ret to 5	DH-PI
2B-7	Midday		9:00 AM	9:05 AM	9:08 AM	9:36 AM	9:45 AM	0:15			
2B-7	Midday		11:00 AM	11:05 AM	11:08 AM	11:36 AM	11:45 AM	0:15			
2B-7	Midday		**1:00 PM**	**1:05 PM**	**1:08 PM**	**1:36 PM**	**1:45 PM**	0:15			
2B-7	Midday		**3:00 PM**	**3:05 PM**	**3:08 PM**	**3:36 PM**	**3:45 PM**		0:34	**4:19 PM**	
2B-1	PM	0:31	**3:30 PM**	**3:36 PM**	**3:39 PM**	**4:10 PM**	**4:20 PM**		0:34	**4:54 PM**	
2B-2	PM	0:31	**4:00 PM**	**4:06 PM**	**4:09 PM**	**4:40 PM**	**4:50 PM**		0:34	**5:24 PM**	
2B-3	PM	0:31	**4:15 PM**	**4:21 PM**	**4:24 PM**	**4:55 PM**	**5:05 PM**		0:34	**5:39 PM**	
2B-7	PM		**4:30 PM**	**4:36 PM**	**4:39 PM**	**5:10 PM**	**5:20 PM**				0:07
2B-4	PM	0:31	**4:45 PM**	**4:51 PM**	**4:54 PM**	**5:25 PM**	**5:35 PM**		0:34	**6:09 PM**	
2B-5	PM	0:31	**5:00 PM**	**5:06 PM**	**5:09 PM**	**5:40 PM**	**5:50 PM**				0:07
2B-1	PM		**5:15 PM**	**5:21 PM**	**5:24 PM**	**5:55 PM**	**6:05 PM**		0:34	**6:39 PM**	
2B-6	PM	0:31	**5:30 PM**	**5:36 PM**	**5:39 PM**	**6:10 PM**	**6:20 PM**				0:07
2B-2	PM		**5:45 PM**	**5:51 PM**	**5:54 PM**	**6:25 PM**	**6:35 PM**				0:07
2B-3	PM		**6:00 PM**	**6:06 PM**	**6:09 PM**	**6:40 PM**	**6:50 PM**				0:07
2B-4	PM		**6:30 PM**	**6:36 PM**	**6:39 PM**	**7:10 PM**	**7:20 PM**				0:07
2B-1	PM		**7:00 PM**	**7:06 PM**	**7:09 PM**	**7:40 PM**	**7:50 PM**				0:07

Summary of Service

Block	Hrs.	Hrs.	Miles
2B-1	0.36	8.62	118.6
2B-2	0.29	6.87	99.0
2B-3	0.21	5.12	79.1
2B-4	0.21	5.12	79.1
2B-5	0.07	1.62	39.5
2B-6	0.07	1.62	39.5
2B-7	0.39	9.33	177.8
Rev.		**38.28**	**632.64**
DH		**14.75**	**497.40**
Total		**53.03**	**1130.04**

Peak Period Only Schedule

Block	Period	DH-PO	1	2	5	6	7	LO	DH to 1	Ret to 1	DH-PI
2B-1	AM	0:07	5:00 AM	5:11 AM	5:41 AM	5:43 AM	5:47 AM		0:34	6:21 AM	
2B-2	AM	0:07	5:30 AM	5:41 AM	6:11 AM	6:13 AM	6:17 AM		0:34	6:51 AM	
2B-3	AM	0:07	6:00 AM	6:11 AM	6:41 AM	6:43 AM	6:47 AM		0:34	7:21 AM	
2B-4	AM	0:07	6:30 AM	6:41 AM	7:11 AM	7:13 AM	7:17 AM		0:34	7:51 AM	
2B-1	AM	0:07	6:45 AM	6:56 AM	7:26 AM	7:28 AM	7:32 AM		0:34	8:06 AM	0:31
2B-5	AM		7:00 AM	7:11 AM	7:41 AM	7:43 AM	7:47 AM				
2B-2	AM	0:07	7:15 AM	7:26 AM	7:56 AM	7:58 AM	8:02 AM		0:34	8:36 AM	
2B-6	AM		7:30 AM	7:41 AM	8:11 AM	8:13 AM	8:17 AM				0:31
2B-3	AM	0:07	7:45 AM	7:56 AM	8:26 AM	8:28 AM	8:32 AM				0:31
2B-7	AM		8:00 AM	8:11 AM	8:41 AM	8:43 AM	8:47 AM				0:31
2B-4	AM	0:07	8:15 AM	8:26 AM	8:56 AM	8:58 AM	9:02 AM				0:31
2B-1	AM		8:30 AM	8:41 AM	9:11 AM	9:13 AM	9:17 AM				0:31
2B-2	AM		9:00 AM	9:11 AM	9:41 AM	9:43 AM	9:47 AM				0:31

Block	Period	DH-PO	7	6	5	2	1	LO	DH to 5	Ret to 5	DH-PI
2B-7	Midday	0:31	3:00 PM	3:05 PM	3:08 PM	3:36 PM	3:45 PM		0:34	4:19 PM	
2B-1	PM	0:31	3:30 PM	3:36 PM	3:39 PM	4:10 PM	4:20 PM		0:34	4:54 PM	
2B-2	PM	0:31	4:00 PM	4:06 PM	4:09 PM	4:40 PM	4:50 PM		0:34	5:24 PM	
2B-3	PM	0:31	4:15 PM	4:21 PM	4:24 PM	4:55 PM	5:05 PM		0:34	5:39 PM	
2B-7	PM		4:30 PM	4:36 PM	4:39 PM	5:10 PM	5:20 PM				0:07
2B-4	PM	0:31	4:45 PM	4:51 PM	4:54 PM	5:25 PM	5:35 PM		0:34	6:09 PM	
2B-5	PM	0:31	5:00 PM	5:06 PM	5:09 PM	5:40 PM	5:50 PM				0:07
2B-1	PM		5:15 PM	5:21 PM	5:24 PM	5:55 PM	6:05 PM		0:34	6:39 PM	
2B-6	PM	0:31	5:30 PM	5:36 PM	5:39 PM	6:10 PM	6:20 PM				0:07
2B-2	PM		5:45 PM	5:51 PM	5:54 PM	6:25 PM	6:35 PM				0:07
2B-3	PM		6:00 PM	6:06 PM	6:09 PM	6:40 PM	6:50 PM				0:07
2B-4	PM		6:30 PM	6:36 PM	6:39 PM	7:10 PM	7:20 PM				0:07
2B-1	PM		7:00 PM	7:06 PM	7:09 PM	7:40 PM	7:50 PM				0:07

Summary of Service

Block	Hrs.	Hrs.	Miles
2B-1	0.36	8.62	118.6
2B-2	0.29	6.87	99.0
2B-3	0.21	5.12	79.1
2B-4	0.21	5.12	79.1
2B-5	0.07	1.62	39.5
2B-6	0.07	1.62	39.5
2B-7	0.13	3.12	59.2
Rev.		**32.07**	**514.02**
DH		**15.78**	**533.40**
Total		**47.85**	**1047.42**

Route 3 — San Pablo/Pinole Shores, Richmond TC Oakland & J. London Sq.

Southbound

1	2	3	4	5	
San Pablo/Pinole Shores	Richmond Pkwy Transit Center	19th Street BART	12th Street BART	2nd/Washington (J. London Sq.)	Total
Mileage	2.7	14.5	0.4	0.7	**18.3**
AM	13.0	30.0	2.0	4.0	**49.0**
Speed:	**12.8**	**28.8**	**10.7**	**9.6**	*22.4*
Midday	14.0	27.0	3.0	4.0	**48.0**
Speed:	**11.7**	**32.6**	**9.5**	**8.7**	*22.9*
PM	14.0	27.0	3.0	4.0	**48.0**
Speed:	**11.7**	**32.6**	**9.5**	**8.7**	*22.9*

Northbound

5	4	3	2	1	
2nd/Washington (J. London Sq.)	12th Street BART	19th Street BART	Richmond Pkwy Transit Center	San Pablo/Pinole Shores	Total
Mileage	0.74	0.4	14.3	2.7	**18.1**
AM	5.0	3.0	32.0	10.0	**50.0**
Speed:	**9.1**	**9.5**	**27.0**	**15.6**	*21.7*
Midday	5.0	3.0	27.0	10.0	**45.0**
Speed:	**9.1**	**9.5**	**32.2**	**15.6**	*24.1*
PM	6.0	3.0	30.0	11.0	**50.0**
Speed:	**7.7**	**8.0**	**28.3**	**14.3**	*21.7*

All-Day Schedule (15-minute peak service)

Block	Period	DH-PO	1	2	3	4	5	LO	DH to 1	Ret to 1	DH-PI
3-1	AM	0:05	5:00 AM	5:13 AM	5:43 AM	5:45 AM	5:49 AM		0:31	6:20	
3-2	AM	0:05	5:30 AM	5:43 AM	6:13 AM	6:15 AM	6:19 AM		0:31	6:50	
3-3	AM	0:05	6:00 AM	6:13 AM	6:43 AM	6:45 AM	6:49 AM		0:31	7:20	
3-1	AM		6:30 AM	6:43 AM	7:13 AM	7:15 AM	7:19 AM		0:31	7:50	
3-4	AM	0:05	6:45 AM	6:58 AM	7:28 AM	7:30 AM	7:34 AM		0:31	8:05	
3-2	AM		7:00 AM	7:13 AM	7:43 AM	7:45 AM	7:49 AM		0:31	8:20	
3-5	AM	0:05	7:15 AM	7:28 AM	7:58 AM	8:00 AM	8:04 AM				0:31
3-3	AM		7:30 AM	7:43 AM	8:13 AM	8:15 AM	8:19 AM		0:31	8:50	
3-6	AM	0:05	7:45 AM	7:58 AM	8:28 AM	8:30 AM	8:34 AM				0:31
3-1	AM		8:00 AM	8:13 AM	8:43 AM	8:45 AM	8:49 AM	0:11			
3-4	AM		8:15 AM	8:28 AM	8:58 AM	9:00 AM	9:04 AM				0:31
3-2	AM		8:30 AM	8:43 AM	9:13 AM	9:15 AM	9:19 AM				0:31
3-3	AM		9:00 AM	9:13 AM	9:43 AM	9:45 AM	9:49 AM				0:31
3-1	Midday		10:00 AM	10:14 AM	10:41 AM	10:44 AM	10:48 AM	0:12			
3-1	Midday		**12:00 PM**	**12:14 PM**	**12:41 PM**	**12:44 PM**	**12:48 PM**	0:12			
3-1	Midday		**2:00 PM**	**2:14 PM**	**2:41 PM**	**2:44 PM**	**2:48 PM**	0:12			

Block	Period	DH-PO	5	4	3	2	1	LO	DH to 5	Ret to 4	DH-PI
3-1	Midday		9:00 AM	9:05 AM	9:08 AM	9:35 AM	9:45 AM	0:15			
3-1	Midday		11:00 AM	11:05 AM	11:08 AM	11:35 AM	11:45 AM	0:15			
3-1	Midday		**1:00 PM**	**1:05 PM**	**1:08 PM**	**1:35 PM**	**1:45 PM**	0:15			
3-1	Midday		**3:00 PM**	**3:05 PM**	**3:08 PM**	**3:35 PM**	**3:45 PM**		0:31	**4:16 PM**	
3-2	PM	0:31	**3:30 PM**	**3:36 PM**	**3:39 PM**	**4:09 PM**	**4:20 PM**		0:31	**4:51 PM**	
3-3	PM	0:31	**4:00 PM**	**4:06 PM**	**4:09 PM**	**4:39 PM**	**4:50 PM**		0:31	**5:21 PM**	
3-4	PM	0:31	**4:15 PM**	**4:21 PM**	**4:24 PM**	**4:54 PM**	**5:05 PM**		0:31	**5:36 PM**	
3-1	PM		**4:30 PM**	**4:36 PM**	**4:39 PM**	**5:09 PM**	**5:20 PM**		0:31	**5:51 PM**	
3-5	PM	0:31	**4:45 PM**	**4:51 PM**	**4:54 PM**	**5:24 PM**	**5:35 PM**				0:05
3-2	PM		**5:00 PM**	**5:06 PM**	**5:09 PM**	**5:39 PM**	**5:50 PM**		0:31	**6:21 PM**	
3-6	PM	0:31	**5:15 PM**	**5:21 PM**	**5:24 PM**	**5:54 PM**	**6:05 PM**				0:05
3-3	PM		**5:30 PM**	**5:36 PM**	**5:39 PM**	**6:09 PM**	**6:20 PM**		0:31	**6:51 PM**	
3-4	PM		**5:45 PM**	**5:51 PM**	**5:54 PM**	**6:24 PM**	**6:35 PM**				0:05
3-1	PM		**6:00 PM**	**6:06 PM**	**6:09 PM**	**6:39 PM**	**6:50 PM**				0:05
3-2	PM		**6:30 PM**	**6:36 PM**	**6:39 PM**	**7:09 PM**	**7:20 PM**				0:05
3-3	PM		**7:00 PM**	**7:06 PM**	**7:09 PM**	**7:39 PM**	**7:50 PM**				0:05

Summary of Service

Block	Hrs.	Hrs.	Miles
3-1	0.58	13.83	218.2
3-2	0.32	7.65	109.1
3-3	0.32	7.65	109.1
3-4	0.19	4.65	72.7
3-5	0.07	1.65	36.4
3-6	0.07	1.65	36.4
Rev.		**37.08**	**581.92**
DH		**13.40**	**457.40**
Total		**50.48**	**1039.32**

Peak Period Only Schedule

Block	Period	DH-PO	1	2	3	4	5	LO	DH to 1	Ret to 1	DH-PI
3-1	AM	0:05	5:00 AM	5:13 AM	5:43 AM	5:45 AM	5:49 AM		0:31	6:20	
3-2	AM	0:05	5:30 AM	5:43 AM	6:13 AM	6:15 AM	6:19 AM		0:31	6:50	
3-3	AM	0:05	6:00 AM	6:13 AM	6:43 AM	6:45 AM	6:49 AM		0:31	7:20	
3-1	AM		6:30 AM	6:43 AM	7:13 AM	7:15 AM	7:19 AM		0:31	7:50	
3-4	AM	0:05	6:45 AM	6:58 AM	7:28 AM	7:30 AM	7:34 AM		0:31	8:05	
3-2	AM		7:00 AM	7:13 AM	7:43 AM	7:45 AM	7:49 AM		0:31	8:20	
3-5	AM	0:05	7:15 AM	7:28 AM	7:58 AM	8:00 AM	8:04 AM				0:31
3-3	AM		7:30 AM	7:43 AM	8:13 AM	8:15 AM	8:19 AM		0:31	8:50	
3-6	AM	0:05	7:45 AM	7:58 AM	8:28 AM	8:30 AM	8:34 AM				0:31
3-1	AM		8:00 AM	8:13 AM	8:43 AM	8:45 AM	8:49 AM				0:31
3-4	AM		8:15 AM	8:28 AM	8:58 AM	9:00 AM	9:04 AM				0:31
3-2	AM		8:30 AM	8:43 AM	9:13 AM	9:15 AM	9:19 AM				0:31
3-3	AM		9:00 AM	9:13 AM	9:43 AM	9:45 AM	9:49 AM				0:31

Block	Period	DH-PO	5	4	3	2	1	LO	DH to 5	Ret to 4	DH-PI
3-1	Midday	0:31	**3:00 PM**	**3:05 PM**	**3:08 PM**	**3:35 PM**	**3:45 PM**		0:31	**4:16 PM**	
3-2	PM	0:31	**3:30 PM**	**3:36 PM**	**3:39 PM**	**4:09 PM**	**4:20 PM**		0:31	**4:51 PM**	
3-3	PM	0:31	**4:00 PM**	**4:06 PM**	**4:09 PM**	**4:39 PM**	**4:50 PM**		0:31	**5:21 PM**	
3-4	PM	0:31	**4:15 PM**	**4:21 PM**	**4:24 PM**	**4:54 PM**	**5:05 PM**		0:31	**5:36 PM**	
3-1	PM		**4:30 PM**	**4:36 PM**	**4:39 PM**	**5:09 PM**	**5:20 PM**		0:31	**5:51 PM**	
3-5	PM	0:31	**4:45 PM**	**4:51 PM**	**4:54 PM**	**5:24 PM**	**5:35 PM**				0:05
3-2	PM		**5:00 PM**	**5:06 PM**	**5:09 PM**	**5:39 PM**	**5:50 PM**		0:31	**6:21 PM**	
3-6	PM	0:31	**5:15 PM**	**5:21 PM**	**5:24 PM**	**5:54 PM**	**6:05 PM**				0:05
3-3	PM		**5:30 PM**	**5:36 PM**	**5:39 PM**	**6:09 PM**	**6:20 PM**		0:31	**6:51 PM**	
3-4	PM		**5:45 PM**	**5:51 PM**	**5:54 PM**	**6:24 PM**	**6:35 PM**				0:05
3-1	PM		**6:00 PM**	**6:06 PM**	**6:09 PM**	**6:39 PM**	**6:50 PM**				0:05
3-2	PM		**6:30 PM**	**6:36 PM**	**6:39 PM**	**7:09 PM**	**7:20 PM**				0:05
3-3	PM		**7:00 PM**	**7:06 PM**	**7:09 PM**	**7:39 PM**	**7:50 PM**				0:05

Summary of Service

Block	Hrs.	Hrs.	Miles
3-1	0.32	7.65	109.1
3-2	0.32	7.65	109.1
3-3	0.32	7.65	91.0
3-4	0.19	4.65	72.7
3-5	0.07	1.65	36.4
3-6	0.07	1.65	36.4
Rev.		**30.90**	**454.74**
DH		**14.27**	**489.40**
Total		**45.17**	**944.14**

Route 4 — San Pablo/Crestview, Richmond TC SF Transbay

Southbound			
1	2	3	
San Pablo/ Pinole Shores	Richmond Pkwy Transit Center	SF Transbay Terminal	Total
Mileage	2.7	18.8	**21.5**
AM	13.0	44.0	**57.0**
Speed:	**12.8**	**28.7**	*22.6*
Midday	14.0	40.0	**54.0**
Speed:	**11.7**	**32.0**	*23.9*
PM	11.0	47.0	**58.0**
Speed:	**15.0**	**27.1**	*22.2*

Northbound			
3	2	1	
SF Transbay Terminal	Richmond Pkwy Transit Center	San Pablo/ Pinole Shores	Total
Mileage	18.7	2.7	**21.4**
AM	51.0	10.0	**61.0**
Speed:	**21.8**	**15.6**	*21.0*
Midday	35.0	10.0	**45.0**
Speed:	**32.0**	**15.6**	*28.5*
PM	39.0	11.0	**50.0**
Speed:	**28.7**	**14.3**	*25.7*

All-Day Schedule (15-minute peak service)

Block	Period	DH-PO	1	2	3	LO	DH to 1	Ret to 1	DH-PI
4-1	AM	0:05	6:00 AM	6:13 AM	6:57 AM		0:37	7:34	
4-2	AM	0:05	6:15 AM	6:28 AM	7:12 AM		0:37	7:49	
4-3	AM	0:05	6:30 AM	6:43 AM	7:27 AM		0:37	8:04	
4-4	AM	0:05	6:45 AM	6:58 AM	7:42 AM		0:37	8:19	
4-5	AM	0:05	7:00 AM	7:13 AM	7:57 AM				0:36
4-6	AM	0:05	7:15 AM	7:28 AM	8:12 AM				0:36
4-7	AM	0:05	7:30 AM	7:43 AM	8:27 AM				0:36
4-1	AM	0:05	7:45 AM	7:58 AM	8:42 AM	0:18			
4-2	AM	0:05	8:00 AM	8:13 AM	8:57 AM				0:36
4-3	AM		8:15 AM	8:28 AM	9:12 AM				0:36
4-4	AM		8:30 AM	8:43 AM	9:27 AM				0:36
4-1	Midday		10:00 AM	10:14 AM	10:54 AM	0:21			
4-1	Midday		**12:15 PM**	**12:29 PM**	**1:09 PM**	0:21			
4-1	Midday		**2:30 PM**	**2:44 PM**	**3:24 PM**	0:36			

Block	Period	DH-PO	3	2	1	LO	DH to 3	Ret to 3	DH-PI
4-1	Midday		9:00 AM	9:35 AM	9:45 AM	0:15			
4-1	Midday		11:15 AM	11:50 AM	**12:00 PM**	0:15			
4-1	Midday		**1:30 PM**	**2:05 PM**	**2:15 PM**	0:15			
4-2	Midday	0:41	**3:00 PM**	**3:35 PM**	**3:45 PM**		0:42	**4:27 PM**	
4-3	PM	0:41	**3:30 PM**	**4:09 PM**	**4:20 PM**		0:42	**5:02 PM**	
4-1	PM		**4:00 PM**	**4:39 PM**	**4:50 PM**		0:42	**5:32 PM**	
4-4	PM	0:41	**4:15 PM**	**4:54 PM**	**5:05 PM**		0:42	**5:47 PM**	
4-5	PM	0:41	**4:30 PM**	**5:09 PM**	**5:20 PM**				0:05
4-2	PM		**4:45 PM**	**5:24 PM**	**5:35 PM**		0:42	**6:17 PM**	
4-6	PM	0:41	**5:00 PM**	**5:39 PM**	**5:50 PM**				0:05
4-3	PM		**5:15 PM**	**5:54 PM**	**6:05 PM**		0:42	**6:47 PM**	
4-7	PM	0:41	**5:30 PM**	**6:09 PM**	**6:20 PM**				0:05
4-1	PM		**5:45 PM**	**6:24 PM**	**6:35 PM**				0:05
4-4	PM		**6:00 PM**	**6:39 PM**	**6:50 PM**				0:05
4-2	PM		**6:30 PM**	**7:09 PM**	**7:20 PM**				0:05
4-3	PM		**7:00 PM**	**7:39 PM**	**7:50 PM**				0:05

Summary of Service

Block	Hrs.	Hrs.	Miles
4-1	0.52	12.58	214.3
4-2	0.29	7.03	107.1
4-3	0.29	7.03	107.1
4-4	0.22	5.28	85.7
4-5	0.07	1.78	42.9
4-6	0.07	1.78	42.9
4-7	0.07	1.78	42.9
Rev.	**1.55**	**37.28**	**642.80**
DH	**15.70**	**15.70**	**500.20**
Total	**17.25**	**52.98**	**1143.00**

Peak Period Only Schedule

Block	Period	DH-PO	1	2	3	LO	DH to 1	Ret to 1	DH-PI
4-1	AM	0:05	6:00 AM	6:13 AM	6:57 AM		0:37	7:34	
4-2	AM	0:05	6:15 AM	6:28 AM	7:12 AM		0:37	7:49	
4-3	AM	0:05	6:30 AM	6:43 AM	7:27 AM		0:37	8:04	
4-4	AM	0:05	6:45 AM	6:58 AM	7:42 AM		0:37	8:19	
4-5	AM	0:05	7:00 AM	7:13 AM	7:57 AM				0:36
4-6	AM	0:05	7:15 AM	7:28 AM	8:12 AM				0:36
4-7	AM	0:05	7:30 AM	7:43 AM	8:27 AM				0:36
4-1	AM	0:05	7:45 AM	7:58 AM	8:42 AM				0:36
4-2	AM	0:05	8:00 AM	8:13 AM	8:57 AM				0:36
4-3	AM		8:15 AM	8:28 AM	9:12 AM				0:36
4-4	AM		8:30 AM	8:43 AM	9:27 AM				0:36

Block	Period	DH-PO	3	2	1	LO	DH to 3	Ret to 3	DH-PI
4-2	Midday	0:41	**3:00 PM**	**3:35 PM**	**3:45 PM**		0:42	**4:27 PM**	
4-3	PM	0:41	**3:30 PM**	**4:09 PM**	**4:20 PM**		0:42	**5:02 PM**	
4-1	PM	0:41	**4:00 PM**	**4:39 PM**	**4:50 PM**		0:42	**5:32 PM**	
4-4	PM	0:41	**4:15 PM**	**4:54 PM**	**5:05 PM**		0:42	**5:47 PM**	
4-5	PM	0:41	**4:30 PM**	**5:09 PM**	**5:20 PM**				0:05
4-2	PM		**4:45 PM**	**5:24 PM**	**5:35 PM**		0:42	**6:17 PM**	
4-6	PM	0:41	**5:00 PM**	**5:39 PM**	**5:50 PM**				0:05
4-3	PM		**5:15 PM**	**5:54 PM**	**6:05 PM**		0:42	**6:47 PM**	
4-7	PM	0:41	**5:30 PM**	**6:09 PM**	**6:20 PM**				0:05
4-1	PM		**5:45 PM**	**6:24 PM**	**6:35 PM**				0:05
4-4	PM		**6:00 PM**	**6:39 PM**	**6:50 PM**				0:05
4-2	PM		**6:30 PM**	**7:09 PM**	**7:20 PM**				0:05
4-3	PM		**7:00 PM**	**7:39 PM**	**7:50 PM**				0:05

Summary of Service

Block	Hrs.	Hrs.	Miles
4-1	0.22	5.28	85.7
4-2	0.29	7.03	107.1
4-3	0.29	7.03	107.1
4-4	0.22	5.28	85.7
4-5	0.07	1.78	42.9
4-6	0.07	1.78	42.9
4-7	0.07	1.78	42.9
Rev.	**1.25**	**29.98**	**514.22**
DH	**16.98**	**16.98**	**542.40**
Total	**18.23**	**46.97**	**1056.62**

Route 5 — Contra Costa College, San Pablo Dam P&R, SF Transbay

Southbound			
1	2	3	
Contra Costa College	San Pablo Dam P&R	SF Transbay Terminal	Total
Mileage	2.7	16.4	**19.0**
AM	8.0	40.0	**48.0**
Speed:	**19.2**	**28.0**	*23.8*
Midday	10.0	37.0	**47.0**
Speed:	**15.5**	**31.1**	*24.3*
PM	10.0	42.0	**52.0**
Speed:	**15.5**	**26.4**	*21.9*

Northbound			
3	2	1	
SF Transbay Terminal	San Pablo Dam P&R	Contra Costa College	Total
Mileage	16.4	2.7	**19.1**
AM	46.0	8.0	**54.0**
Speed:	**21.4**	**20.5**	*21.2*
Midday	32.0	10.0	**42.0**
Speed:	**31.1**	**16.3**	*27.2*
PM	35.0	10.0	**45.0**
Speed:	**28.0**	**16.3**	*25.4*

All-Day Schedule (15-minute peak service)

Block	Period	DH-PO	1	2	3	LO	DH to 1	Ret to 1	DH-PI
5-1	AM	0:07	5:00 AM	5:08 AM	5:48 AM		0:33	6:21	
5-2	AM	0:07	5:30 AM	5:38 AM	6:18 AM		0:33	6:51	
5-3	AM	0:07	6:00 AM	6:08 AM	6:48 AM		0:33	7:21	
5-4	AM	0:07	6:30 AM	6:38 AM	7:18 AM		0:33	7:51	
5-1	AM		6:45 AM	6:53 AM	7:33 AM		0:33	8:06	
5-5	AM	0:07	7:00 AM	7:08 AM	7:48 AM				0:27
5-2	AM		7:15 AM	7:23 AM	8:03 AM		0:33	8:36	
5-6	AM	0:07	7:30 AM	7:38 AM	8:18 AM				0:27
5-3	AM		7:45 AM	7:53 AM	8:33 AM	0:27			
5-7	AM	0:07	8:00 AM	8:08 AM	8:48 AM				0:27
5-4	AM		8:15 AM	8:23 AM	9:03 AM				0:27
5-1	AM		8:30 AM	8:38 AM	9:18 AM				0:27
5-2	AM		9:00 AM	9:08 AM	9:48 AM				0:27
5-3	Midday		10:00 AM	10:10 AM	10:47 AM	0:13			
5-3	Midday		**12:00 PM**	**12:10 PM**	**12:47 PM**	0:13			
5-3	Midday		**2:00 PM**	**2:10 PM**	**2:47 PM**	0:13			

Block	Period	DH-PO	3	2	1	LO	DH to 3	Ret to 3	DH-PI
5-3	Midday		9:00 AM	9:32 AM	9:42 AM	0:18			
5-3	Midday		11:00 AM	11:32 AM	11:42 AM	0:18			
5-3	Midday		**1:00 PM**	**1:32 PM**	**1:42 PM**	0:18			
5-3	Midday		**3:00 PM**	**3:32 PM**	**3:42 PM**		0:38	**4:20 PM**	
5-1	PM	0:32	**3:30 PM**	**4:05 PM**	**4:15 PM**		0:38	**4:53 PM**	
5-2	PM	0:32	**4:00 PM**	**4:35 PM**	**4:45 PM**		0:38	**5:23 PM**	
5-4	PM	0:32	**4:15 PM**	**4:50 PM**	**5:00 PM**		0:38	**5:38 PM**	
5-3	PM		**4:30 PM**	**5:05 PM**	**5:15 PM**				0:07
5-5	PM	0:32	**4:45 PM**	**5:20 PM**	**5:30 PM**		0:38	**6:08 PM**	
5-6	PM	0:32	**5:00 PM**	**5:35 PM**	**5:45 PM**				0:07
5-1	PM		**5:15 PM**	**5:50 PM**	**6:00 PM**		0:38	**6:38 PM**	
5-7	PM	0:32	**5:30 PM**	**6:05 PM**	**6:15 PM**				0:07
5-2	PM		**5:45 PM**	**6:20 PM**	**6:30 PM**				0:07
5-4	PM		**6:00 PM**	**6:35 PM**	**6:45 PM**				0:07
5-5	PM		**6:30 PM**	**7:05 PM**	**7:15 PM**				0:07
5-1	PM		**7:00 PM**	**7:35 PM**	**7:45 PM**				0:07

Summary of Service

Block	Hrs.	Hrs.	Miles
5-1	0.36	8.55	114.2
5-2	0.28	6.80	95.1
5-3	0.47	11.25	190.4
5-4	0.21	5.05	76.1
5-5	0.14	3.30	57.1
5-6	0.06	1.55	38.1
5-7	0.06	1.55	38.1
Rev.		**38.05**	**609.12**
DH		**14.63**	**456.00**
Total		**52.68**	**1065.12**

Peak Period Only Schedule

Block	Period	DH-PO	1	2	3	LO	DH to 1	Ret to 1	DH-PI
5-1	AM	0:07	5:00 AM	5:08 AM	5:48 AM		0:33	6:21	
5-2	AM	0:07	5:30 AM	5:38 AM	6:18 AM		0:33	6:51	
5-3	AM	0:07	6:00 AM	6:08 AM	6:48 AM		0:33	7:21	
5-4	AM	0:07	6:30 AM	6:38 AM	7:18 AM		0:33	7:51	
5-1	AM		6:45 AM	6:53 AM	7:33 AM		0:33	8:06	
5-5	AM	0:07	7:00 AM	7:08 AM	7:48 AM				0:27
5-2	AM		7:15 AM	7:23 AM	8:03 AM		0:33	8:36	
5-6	AM	0:07	7:30 AM	7:38 AM	8:18 AM				0:27
5-3	AM		7:45 AM	7:53 AM	8:33 AM				0:27
5-7	AM	0:07	8:00 AM	8:08 AM	8:48 AM				0:27
5-4	AM		8:15 AM	8:23 AM	9:03 AM				0:27
5-1	AM		8:30 AM	8:38 AM	9:18 AM				0:27
5-2	AM		9:00 AM	9:08 AM	9:48 AM				0:27

Block	Period	DH-PO	3	2	1	LO	DH to 3	Ret to 3	DH-PI
5-3	Midday	0:32	3:00 PM	3:32 PM	3:42 PM		0:38	4:20 PM	
5-1	PM	0:32	3:30 PM	4:05 PM	4:15 PM		0:38	4:53 PM	
5-2	PM	0:32	4:00 PM	4:35 PM	4:45 PM		0:38	5:23 PM	
5-4	PM	0:32	4:15 PM	4:50 PM	5:00 PM		0:38	5:38 PM	
5-3	PM		4:30 PM	5:05 PM	5:15 PM				0:07
5-5	PM	0:32	4:45 PM	5:20 PM	5:30 PM		0:38	6:08 PM	
5-6	PM	0:32	5:00 PM	5:35 PM	5:45 PM				0:07
5-1	PM		5:15 PM	5:50 PM	6:00 PM		0:38	6:38 PM	
5-7	PM	0:32	5:30 PM	6:05 PM	6:15 PM				0:07
5-2	PM		5:45 PM	6:20 PM	6:30 PM				0:07
5-4	PM		6:00 PM	6:35 PM	6:45 PM				0:07
5-5	PM		6:30 PM	7:05 PM	7:15 PM				0:07
5-1	PM		7:00 PM	7:35 PM	7:45 PM				0:07

Summary of Service

Block	Hrs.	Hrs.	Miles
5-1	0.31	7.55	114.2
5-2	0.28	6.80	95.1
5-3	0.20	4.80	76.1
5-4	0.21	5.05	76.1
5-5	0.14	3.30	57.1
5-6	0.06	1.55	38.1
5-7	0.06	1.55	38.1
Rev.		**30.60**	**494.91**
DH		**15.62**	**487.00**
Total		**46.22**	**981.91**

Route 6

Contra Costa College, Richmond East Oakland & J. London Sq.

Southbound

1	2	3	4	5	6	
Contra Costa College	Richmond East P&R	65th/Hollis	19th Street BART	12th Street BART	2nd/Washington (J. London Sq.)	Total
Mileage	4.0	7.7	2.8	0.4	0.7	**15.6**
AM	18.0	16.0	13.0	2.0	5.0	**54.0**
Speed:	**13.5**	**28.3**	**13.0**	**10.7**	**7.7**	*17.3*
Midday	18.0	15.0	14.0	3.0	5.0	**55.0**
Speed:	**13.5**	**30.9**	**11.8**	**9.5**	**8.8**	*17.0*
PM	18.0	15.0	13.0	3.0	5.0	**54.0**
Speed:	**13.5**	**31.2**	**13.0**	**9.5**	**8.8**	*17.3*

Northbound

6	5	4	3	2	1	
2nd/Washington (J. London Sq.)	12th Street BART	19th Street BART	65th/Hollis	Richmond East P&R	Contra Costa College	Total
Mileage	0.74	0.4	2.3	6.9	3.9	**14.3**
AM	5.0	3.0	11.0	16.0	17.0	**52.0**
Speed:	**9.1**	**9.5**	**12.5**	**26.1**	**13.8**	*16.5*
Midday	5.0	3.0	11.0	13.0	17.0	**49.0**
Speed:	**9.1**	**9.5**	**12.5**	**31.5**	**13.8**	*17.5*
PM	6.0	3.0	11.0	15.0	17.0	**52.0**
Speed:	**7.7**	**8.0**	**12.5**	**27.8**	**13.8**	*16.5*

Deadhead Distances a

Garage-CC
J London-C
J London-G

All-Day Schedule (15-minute peak service)

Block	Period	DH-PO	1	2	3	4	5	6	LO	DH to 1	Ret to 1	DH-PI
6-1	AM	0:07	5:00 AM	5:18 AM	5:34 AM	5:47 AM	5:49 AM	5:54 AM		0:27	6:21	
6-2	AM	0:07	5:30 AM	5:48 AM	6:04 AM	6:17 AM	6:19 AM	6:24 AM		0:27	6:51	
6-3	AM	0:07	6:00 AM	6:18 AM	6:34 AM	6:47 AM	6:49 AM	6:54 AM		0:27	7:21	
6-1	AM		6:30 AM	6:48 AM	7:04 AM	7:17 AM	7:19 AM	7:24 AM		0:27	7:51	
6-4	AM	0:07	6:45 AM	7:03 AM	7:19 AM	7:32 AM	7:34 AM	7:39 AM		0:27	8:06	
6-2	AM		7:00 AM	7:18 AM	7:34 AM	7:47 AM	7:49 AM	7:54 AM		0:27	8:21	
6-5	AM	0:07	7:15 AM	7:33 AM	7:49 AM	8:02 AM	8:04 AM	8:09 AM				0:21
6-3	AM		7:30 AM	7:48 AM	8:04 AM	8:17 AM	8:19 AM	8:24 AM		0:27	8:51	
6-6	AM	0:07	7:45 AM	8:03 AM	8:19 AM	8:32 AM	8:34 AM	8:39 AM	0:26			
6-1	AM		8:00 AM	8:18 AM	8:34 AM	8:47 AM	8:49 AM	8:54 AM				0:21
6-4	AM		8:15 AM	8:33 AM	8:49 AM	9:02 AM	9:04 AM	9:09 AM				0:21
6-2	AM		8:30 AM	8:48 AM	9:04 AM	9:17 AM	9:19 AM	9:24 AM				0:21
6-3	AM		9:00 AM	9:18 AM	9:34 AM	9:47 AM	9:49 AM	9:54 AM				0:21
6-6	Midday		10:00 AM	10:18 AM	10:33 AM	10:47 AM	10:50 AM	10:55 AM	0:10			
6-6	Midday		**12:00 PM**	**12:18 PM**	**12:33 PM**	**12:47 PM**	**12:50 PM**	**12:55 PM**	0:10			
6-6	Midday		**2:00 PM**	**2:18 PM**	**2:33 PM**	**2:47 PM**	**2:50 PM**	**2:55 PM**	0:10			

Block	Period	DH-PO	6	5	4	3	2	1	LO	DH to 6	Ret to 6	DH-PI
6-6	Midday		9:00 AM	9:05 AM	9:08 AM	9:19 AM	9:32 AM	9:49 AM	0:11			
6-6	Midday		11:00 AM	11:05 AM	11:08 AM	11:19 AM	11:32 AM	11:49 AM	0:11			
6-6	Midday		**1:00 PM**	**1:05 PM**	**1:08 PM**	**1:19 PM**	**1:32 PM**	**1:49 PM**	0:11			
6-6	Midday		**3:00 PM**	**3:05 PM**	**3:08 PM**	**3:19 PM**	**3:32 PM**	**3:49 PM**		0:27	**4:16 PM**	
6-1	PM	0:35	**3:30 PM**	**3:36 PM**	**3:39 PM**	**3:50 PM**	**4:05 PM**	**4:22 PM**		0:27	**4:49 PM**	
6-2	PM	0:35	**4:00 PM**	**4:06 PM**	**4:09 PM**	**4:20 PM**	**4:35 PM**	**4:52 PM**		0:27	**5:19 PM**	
6-3	PM	0:35	**4:15 PM**	**4:21 PM**	**4:24 PM**	**4:35 PM**	**4:50 PM**	**5:07 PM**		0:27	**5:34 PM**	
6-6	PM		**4:30 PM**	**4:36 PM**	**4:39 PM**	**4:50 PM**	**5:05 PM**	**5:22 PM**		0:27	**5:49 PM**	
6-4	PM	0:35	**4:45 PM**	**4:51 PM**	**4:54 PM**	**5:05 PM**	**5:20 PM**	**5:37 PM**				0:07
6-1	PM		**5:00 PM**	**5:06 PM**	**5:09 PM**	**5:20 PM**	**5:35 PM**	**5:52 PM**		0:27	**6:19 PM**	
6-5	PM	0:35	**5:15 PM**	**5:21 PM**	**5:24 PM**	**5:35 PM**	**5:50 PM**	**6:07 PM**				0:07
6-2	PM		**5:30 PM**	**5:36 PM**	**5:39 PM**	**5:50 PM**	**6:05 PM**	**6:22 PM**		0:27	**6:49 PM**	
6-3	PM		**5:45 PM**	**5:51 PM**	**5:54 PM**	**6:05 PM**	**6:20 PM**	**6:37 PM**				0:07
6-6	PM		**6:00 PM**	**6:06 PM**	**6:09 PM**	**6:20 PM**	**6:35 PM**	**6:52 PM**				0:07
6-1	PM		**6:30 PM**	**6:36 PM**	**6:39 PM**	**6:50 PM**	**7:05 PM**	**7:22 PM**				0:07
6-2	PM		**7:00 PM**	**7:06 PM**	**7:09 PM**	**7:20 PM**	**7:35 PM**	**7:52 PM**				0:07

Summary of Service

Block	Hrs.	Hrs.	Miles
6-1	0.32	7.77	89.5
6-2	0.32	7.77	89.5
6-3	0.26	6.27	75.3
6-4	0.14	3.27	45.4
6-5	0.07	1.77	29.8
6-6	0.46	11.12	147.9
Rev.		**37.95**	**477.44**
DH		**12.37**	**378.80**
Total		**50.32**	**856.24**

Peak Period Only Schedule

Block	Period	DH-PO	1	2	3	4	5	6	LO	DH to 1	Ret to 1	DH-PI
6-1	AM	0:07	5:00 AM	5:18 AM	5:34 AM	5:47 AM	5:49 AM	5:54 AM		0:27	6:21	
6-2	AM	0:07	5:30 AM	5:48 AM	6:04 AM	6:17 AM	6:19 AM	6:24 AM		0:27	6:51	
6-3	AM	0:07	6:00 AM	6:18 AM	6:34 AM	6:47 AM	6:49 AM	6:54 AM		0:27	7:21	
6-1	AM		6:30 AM	6:48 AM	7:04 AM	7:17 AM	7:19 AM	7:24 AM		0:27	7:51	
6-4	AM	0:07	6:45 AM	7:03 AM	7:19 AM	7:32 AM	7:34 AM	7:39 AM		0:27	8:06	
6-2	AM		7:00 AM	7:18 AM	7:34 AM	7:47 AM	7:49 AM	7:54 AM		0:27	8:21	
6-5	AM	0:07	7:15 AM	7:33 AM	7:49 AM	8:02 AM	8:04 AM	8:09 AM				0:21
6-3	AM		7:30 AM	7:48 AM	8:04 AM	8:17 AM	8:19 AM	8:24 AM		0:27	8:51	
6-6	AM	0:07	7:45 AM	8:03 AM	8:19 AM	8:32 AM	8:34 AM	8:39 AM				0:21
6-1	AM		8:00 AM	8:18 AM	8:34 AM	8:47 AM	8:49 AM	8:54 AM				0:21
6-4	AM		8:15 AM	8:33 AM	8:49 AM	9:02 AM	9:04 AM	9:09 AM				0:21
6-2	AM		8:30 AM	8:48 AM	9:04 AM	9:17 AM	9:19 AM	9:24 AM				0:21
6-3	AM		9:00 AM	9:18 AM	9:34 AM	9:47 AM	9:49 AM	9:54 AM				0:21

Block	Period	DH-PO	6	5	4	3	2	1	LO	DH to 6	Ret to 6	DH-PI
6-6	Midday	0:35	3:00 PM	3:05 PM	3:08 PM	3:19 PM	3:32 PM	3:49 PM		0:27	4:16 PM	
6-1	PM	0:35	3:30 PM	3:36 PM	3:39 PM	3:50 PM	4:05 PM	4:22 PM		0:27	4:49 PM	
6-2	PM	0:35	4:00 PM	4:06 PM	4:09 PM	4:20 PM	4:35 PM	4:52 PM		0:27	5:19 PM	
6-3	PM	0:35	4:15 PM	4:21 PM	4:24 PM	4:35 PM	4:50 PM	5:07 PM		0:27	5:34 PM	
6-6	PM		4:30 PM	4:36 PM	4:39 PM	4:50 PM	5:05 PM	5:22 PM		0:27	5:49 PM	
6-4	PM	0:35	4:45 PM	4:51 PM	4:54 PM	5:05 PM	5:20 PM	5:37 PM				0:07
6-1	PM		5:00 PM	5:06 PM	5:09 PM	5:20 PM	5:35 PM	5:52 PM		0:27	6:19 PM	
6-5	PM	0:35	5:15 PM	5:21 PM	5:24 PM	5:35 PM	5:50 PM	6:07 PM				0:07
6-2	PM		5:30 PM	5:36 PM	5:39 PM	5:50 PM	6:05 PM	6:22 PM		0:27	6:49 PM	
6-3	PM		5:45 PM	5:51 PM	5:54 PM	6:05 PM	6:20 PM	6:37 PM				0:07
6-6	PM		6:00 PM	6:06 PM	6:09 PM	6:20 PM	6:35 PM	6:52 PM				0:07
6-1	PM		6:30 PM	6:36 PM	6:39 PM	6:50 PM	7:05 PM	7:22 PM				0:07
6-2	PM		7:00 PM	7:06 PM	7:09 PM	7:20 PM	7:35 PM	7:52 PM				0:07

Summary of Service

Block	Hrs.	Hrs.	Miles
6-1	0.32	7.77	89.5
6-2	0.32	7.77	89.5
6-3	0.26	6.27	75.3
6-4	0.14	3.27	45.4
6-5	0.07	1.77	29.8
6-6	0.20	4.77	58.4
Rev.		**31.60**	**387.92**
DH		**13.30**	**403.40**
Total		**44.90**	**791.32**

Route 7 — Contra Costa College, Richmond East, Berkeley

Southbound

1	2	3	4	5	
Contra Costa College	Richmond East P&R	Gilman / 6th	Downtown Berkeley BART	Shattuck / Dwight Way	Total
Mileage	4.0	5.1	2.6	0.5	**12.1**
AM	18.0	10.0	12.0	3.0	**43.0**
Speed:	**13.5**	**29.7**	**13.3**	**11.1**	*16.8*
Midday	18.0	8.0	13.0	3.0	**42.0**
Speed:	**13.5**	**36.4**	**11.7**	**10.0**	*17.2*
PM	18.0	8.0	14.0	3.0	**43.0**
Speed:	**13.5**	**36.6**	**10.7**	**9.4**	*16.8*

Northbound

5	4	3	2	1	
Shattuck / Dwight Way	Downtown Berkeley BART	Gilman / 6th	MacDonald Ave. P&R	Contra Costa College	Total
Mileage	0.47	2.6	4.6	3.9	**11.6**
AM	3.0	11.0	12.0	17.0	**43.0**
Speed:	**10.1**	**13.6**	**23.7**	**13.9**	*16.1*
Midday	3.0	13.0	8.0	17.0	**41.0**
Speed:	**9.2**	**12.0**	**35.2**	**13.9**	*16.9*
PM	3.0	14.0	10.0	17.0	**44.0**
Speed:	**8.7**	**10.9**	**26.9**	**13.9**	*15.8*

All-Day Schedule (15-minute peak service)

Block	Period	DH-PO	1	2	3	4	5	LO	DH to 1	Ret to 1	DH-PI
7-1	AM	0:07	5:00 AM	5:18 AM	5:28 AM	5:40 AM	5:43 AM		0:25	6:08	
7-2	AM	0:07	5:30 AM	5:48 AM	5:58 AM	6:10 AM	6:13 AM		0:25	6:38	
7-3	AM	0:07	6:00 AM	6:18 AM	6:28 AM	6:40 AM	6:43 AM		0:25	7:08	
7-1	AM		6:30 AM	6:48 AM	6:58 AM	7:10 AM	7:13 AM		0:25	7:38	
7-4	AM	0:07	6:45 AM	7:03 AM	7:13 AM	7:25 AM	7:28 AM		0:25	7:53	
7-2	AM		7:00 AM	7:18 AM	7:28 AM	7:40 AM	7:43 AM		0:25	8:08	
7-5	AM	0:07	7:15 AM	7:33 AM	7:43 AM	7:55 AM	7:58 AM				0:18
7-3	AM		7:30 AM	7:48 AM	7:58 AM	8:10 AM	8:13 AM		0:25	8:38	
7-6	AM	0:07	7:45 AM	8:03 AM	8:13 AM	8:25 AM	8:28 AM				0:18
7-1	AM		8:00 AM	8:18 AM	8:28 AM	8:40 AM	8:43 AM	0:17			
7-4	AM		8:15 AM	8:33 AM	8:43 AM	8:55 AM	8:58 AM				0:18
7-2	AM		8:30 AM	8:48 AM	8:58 AM	9:10 AM	9:13 AM				0:18
7-3	AM		9:00 AM	9:18 AM	9:28 AM	9:40 AM	9:43 AM				0:18
7-1	Midday		10:00 AM	10:18 AM	10:26 AM	10:39 AM	10:42 AM				
7-1	Midday		**12:00 PM**	**12:18 PM**	**12:26 PM**	**12:39 PM**	**12:42 PM**				
7-1	Midday		**2:00 PM**	**2:18 PM**	**2:26 PM**	**2:39 PM**	**2:42 PM**				

Block	Period	DH-PO	5	4	3	2	1	Recovery	DH to 6	Ret to 6	DH-PI
7-1	Midday		9:00 AM	9:03 AM	9:16 AM	9:24 AM	9:41 AM	0:19			
7-1	Midday		11:00 AM	11:03 AM	11:16 AM	11:24 AM	11:41 AM	0:19			
7-1	Midday		**1:00 PM**	**1:03 PM**	**1:16 PM**	**1:24 PM**	**1:41 PM**	0:19			
7-1	Midday		**3:00 PM**	**3:03 PM**	**3:16 PM**	**3:24 PM**	**3:41 PM**		0:25	**4:06 PM**	
7-2	PM	0:35	**3:30 PM**	**3:33 PM**	**3:47 PM**	**3:57 PM**	**4:14 PM**		0:25	**4:39 PM**	
7-3	PM	0:35	**4:00 PM**	**4:03 PM**	**4:17 PM**	**4:27 PM**	**4:44 PM**		0:25	**5:09 PM**	
7-4	PM	0:35	**4:15 PM**	**4:18 PM**	**4:32 PM**	**4:42 PM**	**4:59 PM**		0:25	**5:24 PM**	
7-1	PM		**4:30 PM**	**4:33 PM**	**4:47 PM**	**4:57 PM**	**5:14 PM**		0:25	**5:39 PM**	
7-5	PM	0:35	**4:45 PM**	**4:48 PM**	**5:02 PM**	**5:12 PM**	**5:29 PM**				0:07
7-2	PM		**5:00 PM**	**5:03 PM**	**5:17 PM**	**5:27 PM**	**5:44 PM**		0:25	**6:09 PM**	
7-6	PM	0:35	**5:15 PM**	**5:18 PM**	**5:32 PM**	**5:42 PM**	**5:59 PM**				0:07
7-3	PM		**5:30 PM**	**5:33 PM**	**5:47 PM**	**5:57 PM**	**6:14 PM**		0:25	**6:39 PM**	
7-4	PM		**5:45 PM**	**5:48 PM**	**6:02 PM**	**6:12 PM**	**6:29 PM**				0:07
7-1	PM		**6:00 PM**	**6:03 PM**	**6:17 PM**	**6:27 PM**	**6:44 PM**				0:07
7-2	PM		**6:30 PM**	**6:33 PM**	**6:47 PM**	**6:57 PM**	**7:14 PM**				0:07
7-3	PM		**7:00 PM**	**7:03 PM**	**7:17 PM**	**7:27 PM**	**7:44 PM**				0:07

Summary of Service

Block	Hrs.	Hrs.	Miles
7-1	0.57	13.73	141.6
7-2	0.31	7.45	70.8
7-3	0.31	7.45	70.8
7-4	0.19	4.45	47.2
7-5	0.06	1.45	23.6
7-6	0.06	1.45	23.6
Rev.		**35.98**	**377.60**
DH		**11.65**	**298.20**
Total		**47.63**	**675.80**

Peak Period Only Schedule

Block	Period	DH-PO	1	2	3	4	5	LO	DH to 1	Ret to 1	DH-PI
7-1	AM	0:07	5:00 AM	5:18 AM	5:28 AM	5:40 AM	5:43 AM		0:25	6:08	
7-2	AM	0:07	5:30 AM	5:48 AM	5:58 AM	6:10 AM	6:13 AM		0:25	6:38	
7-3	AM	0:07	6:00 AM	6:18 AM	6:28 AM	6:40 AM	6:43 AM		0:25	7:08	
7-1	AM		6:30 AM	6:48 AM	6:58 AM	7:10 AM	7:13 AM		0:25	7:38	
7-4	AM	0:07	6:45 AM	7:03 AM	7:13 AM	7:25 AM	7:28 AM		0:25	7:53	
7-2	AM		7:00 AM	7:18 AM	7:28 AM	7:40 AM	7:43 AM		0:25	8:08	
7-5	AM	0:07	7:15 AM	7:33 AM	7:43 AM	7:55 AM	7:58 AM				0:18
7-3	AM		7:30 AM	7:48 AM	7:58 AM	8:10 AM	8:13 AM		0:25	8:38	
7-6	AM	0:07	7:45 AM	8:03 AM	8:13 AM	8:25 AM	8:28 AM				0:18
7-1	AM		8:00 AM	8:18 AM	8:28 AM	8:40 AM	8:43 AM				0:18
7-4	AM		8:15 AM	8:33 AM	8:43 AM	8:55 AM	8:58 AM				0:18
7-2	AM		8:30 AM	8:48 AM	8:58 AM	9:10 AM	9:13 AM				0:18
7-3	AM		9:00 AM	9:18 AM	9:28 AM	9:40 AM	9:43 AM				0:18

Block	Period	DH-PO	5	4	3	2	1	Recovery	DH to 6	Ret to 6	DH-PI
7-1	Midday	0:35	**3:00 PM**	**3:03 PM**	**3:16 PM**	**3:24 PM**	**3:41 PM**		0:25	**4:06 PM**	
7-2	PM	0:35	**3:30 PM**	**3:33 PM**	**3:47 PM**	**3:57 PM**	**4:14 PM**		0:25	**4:39 PM**	
7-3	PM	0:35	**4:00 PM**	**4:03 PM**	**4:17 PM**	**4:27 PM**	**4:44 PM**		0:25	**5:09 PM**	
7-4	PM	0:35	**4:15 PM**	**4:18 PM**	**4:32 PM**	**4:42 PM**	**4:59 PM**		0:25	**5:24 PM**	
7-1	PM		**4:30 PM**	**4:33 PM**	**4:47 PM**	**4:57 PM**	**5:14 PM**		0:25	**5:39 PM**	
7-5	PM	0:35	**4:45 PM**	**4:48 PM**	**5:02 PM**	**5:12 PM**	**5:29 PM**				0:07
7-2	PM		**5:00 PM**	**5:03 PM**	**5:17 PM**	**5:27 PM**	**5:44 PM**		0:25	**6:09 PM**	
7-6	PM	0:35	**5:15 PM**	**5:18 PM**	**5:32 PM**	**5:42 PM**	**5:59 PM**				0:07
7-3	PM		**5:30 PM**	**5:33 PM**	**5:47 PM**	**5:57 PM**	**6:14 PM**		0:25	**6:39 PM**	
7-4	PM		**5:45 PM**	**5:48 PM**	**6:02 PM**	**6:12 PM**	**6:29 PM**				0:07
7-1	PM		**6:00 PM**	**6:03 PM**	**6:17 PM**	**6:27 PM**	**6:44 PM**				0:07
7-2	PM		**6:30 PM**	**6:33 PM**	**6:47 PM**	**6:57 PM**	**7:14 PM**				0:07
7-3	PM		**7:00 PM**	**7:03 PM**	**7:17 PM**	**7:27 PM**	**7:44 PM**				0:07

Summary of Service

Block	Hrs.	Hrs.	Miles
7-1	0.31	7.45	70.8
7-2	0.31	7.45	70.8
7-3	0.31	7.45	70.8
7-4	0.19	4.45	47.2
7-5	0.06	1.45	23.6
7-6	0.06	1.45	23.6
Rev.		**29.70**	**306.80**
DH		**12.53**	**316.20**
Total		**42.23**	**623.00**

Route 8

Contra Costa College, Rumrill Blvd.
Oakland, J. London Sq.

Southbound

1	2	3	4	5	
Contra Costa College	Richmond West P&R	19th Street BART	12th Street BART	2nd/Washington (J. London Sq.)	Total
Mileage	3.7	11.2	0.4	0.7	**16.0**
AM	15.0	25.0	2.0	4.0	**46.0**
Speed:	**14.9**	**26.7**	**10.7**	**10.2**	*20.9*
Midday	15.0	26.0	3.0	4.0	**48.0**
Speed:	**14.9**	**26.3**	**9.5**	**9.2**	*20.0*
PM	17.0	25.0	3.0	4.0	**49.0**
Speed:	**13.0**	**27.1**	**9.5**	**9.2**	*19.6*

Northbound

5	4	3	2	1	
2nd/Washington (J. London Sq.)	12th Street BART	19th Street BART	Richmond West P&R	Contra Costa College	Total
Mileage	0.74	0.4	11.1	3.8	**16.0**
AM	4.0	2.0	22.0	16.0	**44.0**
Speed:	**10.5**	**10.7**	**30.7**	**14.1**	*21.8*
Midday	5.0	3.0	23.0	16.0	**47.0**
Speed:	**9.5**	**9.5**	**29.0**	**14.1**	*20.4*
PM	5.0	3.0	29.0	17.0	**54.0**
Speed:	**9.5**	**9.5**	**22.7**	**13.1**	*17.7*

All-Day Schedule (15-minute peak service)

Block	Period	DH-PO	1	2	3	4	5	LO	DH to 1	Ret to 1	DH-PI
8-1	AM	0:07	5:00 AM	5:15 AM	5:40 AM	5:42 AM	5:46 AM		0:31	6:17	
8-2	AM	0:07	5:30 AM	5:45 AM	6:10 AM	6:12 AM	6:16 AM		0:31	6:47	
8-3	AM	0:07	6:00 AM	6:15 AM	6:40 AM	6:42 AM	6:46 AM		0:31	7:17	
8-1	AM		6:30 AM	6:45 AM	7:10 AM	7:12 AM	7:16 AM		0:31	7:47	
8-4	AM		6:45 AM	7:00 AM	7:25 AM	7:27 AM	7:31 AM		0:31	8:02	
8-2	AM		7:00 AM	7:15 AM	7:40 AM	7:42 AM	7:46 AM		0:31	8:17	
8-5	AM		7:15 AM	7:30 AM	7:55 AM	7:57 AM	8:01 AM				0:25
8-3	AM		7:30 AM	7:45 AM	8:10 AM	8:12 AM	8:16 AM		0:31	8:47	
8-6	AM		7:45 AM	8:00 AM	8:25 AM	8:27 AM	8:31 AM				0:25
8-1	AM		8:00 AM	8:15 AM	8:40 AM	8:42 AM	8:46 AM	0:14			
8-4	AM		8:15 AM	8:30 AM	8:55 AM	8:57 AM	9:01 AM				0:25
8-2	AM		8:30 AM	8:45 AM	9:10 AM	9:12 AM	9:16 AM				0:25
8-3	AM		9:00 AM	9:15 AM	9:40 AM	9:42 AM	9:46 AM				0:25
8-1	Midday		10:00 AM	10:15 AM	10:41 AM	10:44 AM	10:48 AM				
8-1	Midday		**12:00 PM**	**12:15 PM**	**12:41 PM**	**12:44 PM**	**12:48 PM**				
8-1	Midday		**2:00 PM**	**2:15 PM**	**2:41 PM**	**2:44 PM**	**2:48 PM**				

Block	Period	DH-PO	5	4	3	2	1	Recovery	DH to 6	Ret to 6	DH-PI
8-1	Midday		9:00 AM	9:05 AM	9:08 AM	9:31 AM	9:47 AM	0:13			
8-1	Midday		11:00 AM	11:05 AM	11:08 AM	11:31 AM	11:47 AM	0:13			
8-1	Midday		**1:00 PM**	**1:05 PM**	**1:08 PM**	**1:31 PM**	**1:47 PM**	0:13			
8-1	Midday		**3:00 PM**	**3:05 PM**	**3:08 PM**	**3:31 PM**	**3:47 PM**		0:31	**4:18 PM**	
8-2	PM	0:35	**3:30 PM**	**3:35 PM**	**3:38 PM**	**4:07 PM**	**4:24 PM**		0:31	**4:55 PM**	
8-3	PM	0:35	**4:00 PM**	**4:05 PM**	**4:08 PM**	**4:37 PM**	**4:54 PM**		0:31	**5:25 PM**	
8-4	PM	0:35	**4:15 PM**	**4:20 PM**	**4:23 PM**	**4:52 PM**	**5:09 PM**		0:31	**5:40 PM**	
8-1	PM		**4:30 PM**	**4:35 PM**	**4:38 PM**	**5:07 PM**	**5:24 PM**				0:07
8-5	PM	0:35	**4:45 PM**	**4:50 PM**	**4:53 PM**	**5:22 PM**	**5:39 PM**		0:31	**6:10 PM**	
8-6	PM	0:35	**5:00 PM**	**5:05 PM**	**5:08 PM**	**5:37 PM**	**5:54 PM**				0:07
8-2	PM		**5:15 PM**	**5:20 PM**	**5:23 PM**	**5:52 PM**	**6:09 PM**		0:31	**6:40 PM**	
8-7	PM	0:35	**5:30 PM**	**5:35 PM**	**5:38 PM**	**6:07 PM**	**6:24 PM**				0:07
8-3	PM		**5:45 PM**	**5:50 PM**	**5:53 PM**	**6:22 PM**	**6:39 PM**				0:07
8-4	PM		**6:00 PM**	**6:05 PM**	**6:08 PM**	**6:37 PM**	**6:54 PM**				0:07
8-5	PM		**6:30 PM**	**6:35 PM**	**6:38 PM**	**7:07 PM**	**7:24 PM**				0:07
8-2	PM		**7:00 PM**	**7:05 PM**	**7:08 PM**	**7:37 PM**	**7:54 PM**				0:07

Summary of Service

Block	Hrs.	Hrs.	Miles
8-1	0.58	13.90	176.0
8-2	0.32	7.67	96.0
8-3	0.32	7.67	80.0
8-4	0.19	4.67	64.0
8-5	0.07	1.67	48.0
8-6	0.07	1.67	32.0
8-7	0.04	0.90	16.0
Rev.		**38.13**	**512.00**
DH		**13.47**	**369.40**
Total		**51.60**	**881.40**

Peak Period Only Schedule

Block	Period	DH-PO	1	2	3	4	5	LO	DH to 1	Ret to 1	DH-PI
8-1	AM	0:07	5:00 AM	5:15 AM	5:40 AM	5:42 AM	5:46 AM		0:31	6:17	
8-2	AM	0:07	5:30 AM	5:45 AM	6:10 AM	6:12 AM	6:16 AM		0:31	6:47	
8-3	AM	0:07	6:00 AM	6:15 AM	6:40 AM	6:42 AM	6:46 AM		0:31	7:17	
8-1	AM		6:30 AM	6:45 AM	7:10 AM	7:12 AM	7:16 AM		0:31	7:47	
8-4	AM		6:45 AM	7:00 AM	7:25 AM	7:27 AM	7:31 AM		0:31	8:02	
8-2	AM		7:00 AM	7:15 AM	7:40 AM	7:42 AM	7:46 AM		0:31	8:17	
8-5	AM		7:15 AM	7:30 AM	7:55 AM	7:57 AM	8:01 AM				0:25
8-3	AM		7:30 AM	7:45 AM	8:10 AM	8:12 AM	8:16 AM		0:31	8:47	
8-6	AM		7:45 AM	8:00 AM	8:25 AM	8:27 AM	8:31 AM				0:25
8-1	AM		8:00 AM	8:15 AM	8:40 AM	8:42 AM	8:46 AM				0:25
8-4	AM		8:15 AM	8:30 AM	8:55 AM	8:57 AM	9:01 AM				0:25
8-2	AM		8:30 AM	8:45 AM	9:10 AM	9:12 AM	9:16 AM				0:25
8-3	AM		9:00 AM	9:15 AM	9:40 AM	9:42 AM	9:46 AM				0:25

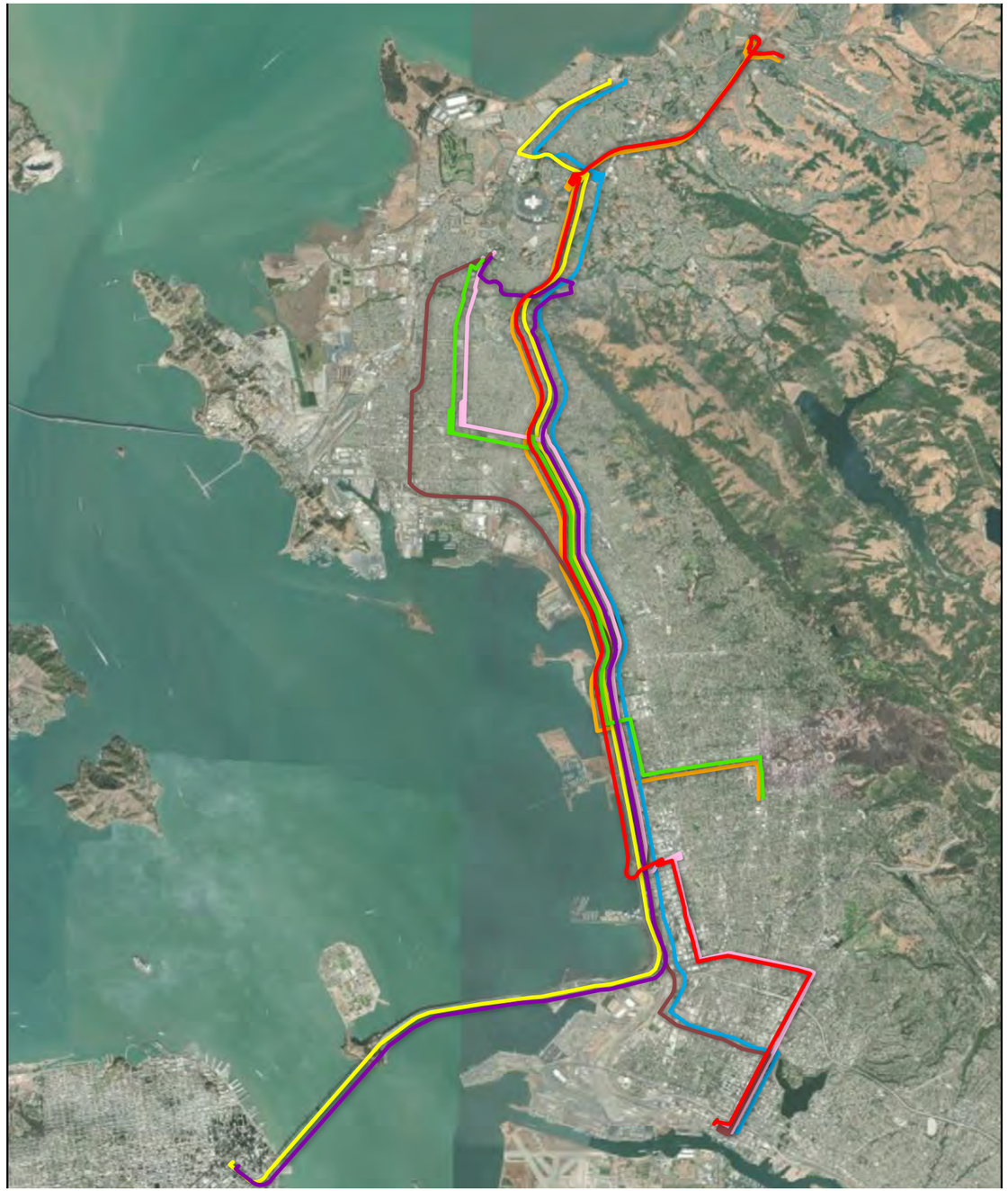
Block	Period	DH-PO	5	4	3	2	1	Recovery	DH to 6	Ret to 6	DH-PI
8-1	Midday	0:35	3:00 PM	3:05 PM	3:08 PM	3:31 PM	3:47 PM		0:31	4:18 PM	
8-2	PM	0:35	3:30 PM	3:35 PM	3:38 PM	4:07 PM	4:24 PM		0:31	4:55 PM	
8-3	PM	0:35	4:00 PM	4:05 PM	4:08 PM	4:37 PM	4:54 PM		0:31	5:25 PM	
8-4	PM	0:35	4:15 PM	4:20 PM	4:23 PM	4:52 PM	5:09 PM		0:31	5:40 PM	
8-1	PM		4:30 PM	4:35 PM	4:38 PM	5:07 PM	5:24 PM				0:07
8-5	PM	0:35	4:45 PM	4:50 PM	4:53 PM	5:22 PM	5:39 PM		0:31	6:10 PM	
8-6	PM	0:35	5:00 PM	5:05 PM	5:08 PM	5:37 PM	5:54 PM				0:07
8-2	PM		5:15 PM	5:20 PM	5:23 PM	5:52 PM	6:09 PM		0:31	6:40 PM	
8-7	PM	0:35	5:30 PM	5:35 PM	5:38 PM	6:07 PM	6:24 PM				0:07
8-3	PM		5:45 PM	5:50 PM	5:53 PM	6:22 PM	6:39 PM				0:07
8-4	PM		6:00 PM	6:05 PM	6:08 PM	6:37 PM	6:54 PM				0:07
8-5	PM		6:30 PM	6:35 PM	6:38 PM	7:07 PM	7:24 PM				0:07
8-2	PM		7:00 PM	7:05 PM	7:08 PM	7:37 PM	7:54 PM				0:07

Summary of Service

Block	Hrs.	Hrs.	Miles
8-1	0.32	7.67	80.0
8-2	0.32	7.67	96.0
8-3	0.32	7.67	80.0
8-4	0.19	4.67	64.0
8-5	0.07	1.67	48.0
8-6	0.07	1.67	32.0
8-7	0.04	0.90	16.0
Rev.		**31.90**	**416.00**
DH		**14.47**	**394.00**
Total		**46.37**	**810.00**

H.

FINANCIAL PLAN



WCCTAC AC TRANSIT WESTCAT Caltrans

WEST CONTRA COSTA COUNTY
EXPRESS BUS IMPLEMENTATION PLAN

FINANCIAL PLAN

January | 2020

Prepared by

Transportation Analytics

EXECUTIVE SUMMARY

Based on earlier work in this study, a ten-year financial outlook was developed to accompany the proposed list of express bus routes and the associated capital projects in the implementation plan. The proposed bus routes have been grouped into near-term and long-term phases and the capital projects have been segmented into required and optimal projects. The goal of the financial analysis is to determine which of these sub-sets can be deployed within the envelope of available financial resources.

The committed funding for the new express bus routes comes primarily from two sources that are not yet accessible to the transit operator. The Metropolitan Transportation Commission's Regional Measure 3 (RM3) and the Contra Costa Transportation Authority's new Transportation Expenditure Plan (TEP) both have specific funding allocations dedicated to support the express bus services. However, RM3 is currently the subject of legal challenges so the funds are being held in escrow for the time being, and the TEP goes before voters later this year. There are other minor funding sources available to supplement these core revenues, but they do not materially affect the findings & recommendations of the financial analysis.

Even under optimistic assumptions, RM3 alone cannot fund the buses and capital projects for any of the near-term routes. As a result, approval of the TEP or securing another funding source would be required to be able to launch the plan as it is currently configured. If both RM3 and the TEP were to become available, the funding total would be enough to implement the required projects for the near-term routes with some funds leftover to pursue a portion of the rest of the plan.

After building the required projects for the near-term routes, the remaining funds are insufficient to fully build out either the set of required projects for the long-term routes or the set of optimal projects for the near-term routes. However, they can support the full set of improvements associated with the near-term routes except the transit center expansions at Hercules and Richmond Parkway. The balance of committed funding available to the project could be used either as a contribution towards the Hercules and Richmond Parkway projects, or it could support a scaled-back set of improvements to expand parking capacity at these facilities while additional funding is secured.

In either case, under current assumptions for the near-term routes and associated required projects, the annual allocation of available RM3 operating funds will be fully utilized within the 10-year plan horizon, so additional operating contributions will need to come from either TEP or other funding sources. To fully implement the entire set of required and optimal projects for all of the proposed express bus facilities, additional financial resources should be secured. This would most likely come from competitive grant programs, such as California's Solutions for Congested Corridors Program, the FTA Section 5339 Bus and Bus Facilities Program, and/or any one of the incentive grants available for purchase of Zero-Emission Busses.

INTRODUCTION

This memo describes the financial analysis conducted for the final set of express bus routes and associated capital projects developed during earlier work in the West Contra Costa County Express Bus Implementation Plan study. In particular, technical analysis of transit operational requirements and potential passenger demand were used to identify two phases of route deployment (near-term and long-term) and to prioritize and group the capital projects to fit this operational phasing. The specific list of bus routes and capital projects is described in more detail in the West Contra Costa County Express Bus Implementation Plan.

With the route phasing as a given, the financial analysis compared the capital and operating costs of the various plan components with the known and potential sources of funding that could be available to support

implementation. The goal of the analysis was to identify and confirm the feasible sub-set of routes and projects that could be implemented within the known funding sources, and then to quantify the remaining funding gaps, if any, in order to help decision-makers seek funding to support the implementation of the full Express Bus plan. The model uses a ten-year planning horizon, which is the same timeframe as a typical Short-Range Transit Plan used by many transit operators to assess their overall financial outlook.

The remainder of this memo is organized into three sections:

- **Funding Sources** lists the set of capital and operating monies that were identified and considered in this analysis, including several sources that are well-defined at this time and some additional prospective sources that should be investigated and pursued to complement the known sources.
- **Development of Financial Model** describes the inputs and assumptions that shaped the financial calculations, including the critical path considerations that could change the financial outcomes calculated by the model.
- **Results of Financial Model** explains the conclusions of the model calculations for two different identified scenarios and discusses recommendations for next steps.

FUNDING SOURCES

As with most transit projects, funding to support capital construction and system operations for the proposed express bus routes would come from a variety of sources and partners. Some funding has already been formally dedicated to the transit service being developed in this study; other funding sources appear to be a strong fit for the new routes, but they may require competitive applications or formal allocation by other partners before funds can be accessed. This section describes each funding sources considered in this study, including the usage restrictions and allocation guidelines that are relevant to the express bus routes, the assumptions used to develop estimates of available funds from each source used in the financial analysis, and highlights of sources that are the best candidates for seeking additional monies to support the new service.

MTC Regional Measure 3

In its role as the Bay Area Toll Authority (BATA), the Metropolitan Transportation Commission (MTC) operates the seven state-owned toll bridges in the Bay Area. Through region-wide ballot initiatives, MTC has received voter approval to charge additional tolls to support expenditure plans that, in part, provide transit service to help relieve traffic congestion in the bridge corridors. The most recent ballot initiative, known as Regional Measure 3 or RM3, was approved by voters in June 2018. The measure included specific line item funding allocations that would benefit new transit service in West Contra Costa County. MTC has been collecting the new RM3 tolls since January 2019, but several lawsuits have been filed challenging the validity of the measure, so MTC is holding the collected funds in escrow until the court challenges are fully resolved. Should the court find in favor of MTC, several funding allocations would become immediately available for the express bus services.

I-80 Transit Improvements

The RM3 expenditure plan includes a $25 million set-aside for a group of capital projects known as "I-80 Transit Improvements." The funds have already been sub-allocated to specific projects, three of which have a direct bearing on the West County express bus services:

- **WCCTA Bus Operations Facility Expansion and Modernization ($5 Million)** – This allocation will cover the majority of the costs of the expansion of WestCAT facilities that would be necessary to launch additional express bus services. The design, timing, and budget of the facility improvements are beyond the scope of the express bus implementation plan, so the associated capital costs and revenues are not included in this financial analysis. However, completion of this capital project is necessary before new WestCAT-operated service can begin, so the availability of these RM3 revenues are on the critical path of deploying the new routes.
- **Express Bus Service Expansion in I-80 Corridor (Bus Acquisition) ($5 Million)** – This allocation will provide funding to acquire five new express bus vehicles for WestCAT service. In practice, the buses purchased with these funds may not be physically deployed on the routes identified in this study, but the fleet expansion will allow WestCAT to grow its available fleet, freeing up buses that could potentially be used on the new proposed routes.
- **I-80 Corridor Transit Improvements in Contra Costa County ($15 Million)** – This allocation will be evenly divided to support the capital projects that emerge from two on-going planning studies: this study of express bus service in West Contra Costa County and a study of improvements to Rapid Bus and BRT services along San Pablo Avenue. Some of the recommendations for San Pablo could overlap with the projects needed for the new express bus routes, but the findings of the San Pablo study are still under development, so it is not possible to confirm how the San Pablo share will be allocated. The financial analysis assumes that half of the $15 million ($7.5 million) would be available for capital projects to support the proposed express bus service.

AC Transit Rapid Bus Corridor Improvements

The RM3 expenditure plan includes $100 million in funding for capital projects located on Rapid Bus corridors in the AC Transit route network. Several of the proposed express bus routes operate on corridors that currently have Rapid Bus service, such as Shattuck Avenue in Berkeley and 40th Street in Emeryville and Oakland. It is assumed that the capital projects on these specific routes, such as Transit Signal Priority, would be directly coordinated with and supported by AC Transit, and thus potentially eligible for a funding contribution from this source. The project team identified up to $1.5 million (2019$) in capital projects that are located on current Rapid Bus corridors, and the financial analysis assumed that the projects would all of their funding from this revenue source.

Regional Express Bus Operating Funds

In addition to the capital funds noted above, RM3 also includes operating funding. In particular, the expenditure program allocates $20 million per year towards regional express bus services. The routes proposed in this study relieve congestion in the bridge corridors and would almost certainly be eligible for these operating funds. However, BATA has not yet defined a methodology for allocating the $20 million to different routes, transit operators, and geographies. The financial analysis makes the simplifying assumption that up to 25% of the funds ($5 million per year) could flow to support new express bus routes in West Contra Costa County. It should be noted that prior regional measures did not allow transit agencies to carry over unspent operating funds from year to year, and the same approach was assumed here. Also, the bridge toll increase does not escalate for inflation, so

it is assumed the $20 million total for this spending category will be held constant and its purchasing power will erode over time.

CCTA Transportation Expenditure Plan

The Contra Costa Transportation Authority (CCTA) is the agency responsible for planning, funding, and implementing innovative transit programs to reduce emissions and improve mobility in Contra Costa County. Some of CCTA's work is funded through voter-approved sales taxes including Measure C (1988) and Measure J (2004). In 2016, the CCTA board began moving forward with placing a new 35-year Transportation Expenditure Plan (TEP) on the ballot. The latest version will go before voters in March 2020. If the measure passes, funds from the new TEP would become available to support the express bus projects approximately 12 to 18 months after the election. The first allocation listed below has the potential to provide $90 Million specifically for the express service. The other three allocation items noted below have a potential nexus with the improvements proposed to support the identified routes.[1]

Improve Transit Reliability Along the I-80 Corridor

The TEP includes a $90 million allocation specifically focused on new transit projects for congestion relief in the I-80 corridor in West Contra Costa County. The expenditure plan specifically cites new express bus service, highway interchange and access improvements, and dedicated part-time transit lanes on I-80 as potential investments, all of which are included as elements of the implementation plan. Discussions with CCTA staff indicated that this **$90 million would be considered dedicated funding towards the recommendations of this study**, and that the funds could be spent on any project components that are physically located in Contra Costa County as well as vehicle purchases and operating expenses.

Relieve Congestion and Improve Local Access Along the I-80 Corridor

The TEP includes $57 million for a variety of projects in the I-80 corridor including several elements that are closely related to portions of the final project list in this study: improving and expanding express transit service and transforming park-and-rides into shared mobility hubs. Other projects in this investment category are focused on operational and technology improvements to I-80 itself, and while these types of projects would likely benefit the express bus services, they do not have as clear a nexus to the capital projects listed in the implementation plan. Because the project list is so varied, it is not possible for CCTA to confirm how projects in the express bus implementation plan will fare relative to other potential investments. As a conservative assumption, the financial analysis does not include any funds from this category at this time. Project sponsors should apply for funding in this category in order to supplement confirmed available sources.

Improve Traffic Flow on Major Roads in West County

The TEP includes a $38 million line item for improvements to local roads that could have a nexus with a subset of the express bus implementation plan. The expenditure plan document specifically lists traffic signal synchronization and bus transit facility enhancements as eligible expenses for this investment category, both of

[1] The TEP is based on sales tax revenues, so the total amount collected by CCTA may exceed or fall short of projections, depending on the pace of local economic growth over the 35-year life of the plan. All individual line item allocations in the expenditure plan are calculated as a relative share of the $3.6 billion total in the approved program. As funds are drawn down from a particular line item, CCTA decreases that item's relative share of future revenues in proportion, which reduces future exposure to any excess or shortfall in tax receipts. These effects are not modeled in the financial calculations presented here; it is assumed that the express bus projects will claim and receive the full amount allocated in the TEP.

which are included in the project list from this study. As with the previous line item, other potential investments may take priority for use of these funds, so CCTA cannot confirm an amount that might be allocated to the express bus projects. As a conservative assumption, the financial analysis does not include any funds from this category at this time. Project sponsors should apply for funding in this category in order to supplement confirmed available sources.

Increase Bus Services and Reliability in West County

The TEP also provides significant investments targeted directly at transit service improvements, including a $250 million line item for services in West Contra Costa County. Both WestCAT and AC Transit are eligible for funding. The expenditure plan document cites the goal of using the funds to, "provide cleaner, safer, and more reliable trips on buses," and that the funding will allow for frequency increases and fare off-sets to increase ridership. The description of this line item is not specific enough to judge how much of this money, if any, would flow towards supporting entirely new express bus routes, so as a conservative assumption, the financial analysis does not include any funds from this category at this time. Both transit operators should maximize use of these funds to support and grow their overall route networks, including the recommended express bus routes.

Additional Capital Sources

Hercules TIF

During the development of the capital project list, it became clear that one candidate project—the SR-4/I-80 interchange improvements—were largely the same as an existing item in the project list for the City of Hercules Transportation Impact Fee (TIF) program. The cost for the improvements needed for the project as defined in this study is less than the estimate currently shown in the Hercules TIF list, so it was assumed that 100% of the costs for this particular capital project would be paid with City of Hercules funds in any scenario that includes that project.

Externally Funded Projects

Several of the largest improvements in the capital projects list for this study were under development well before this study began and their on-going evaluation, design, and construction exceeds the scope of this planning effort. It was assumed that 100% of the costs for these projects would be paid from other external funding sources, and that the final development timeline of each of these projects would support the implementation of the express bus routes. As a result, the financial model does not include capital costs or capital revenues associated with the following five "externally funded" projects:

- I-80/Ashby Avenue Interchange
- I-80/San Pablo Dam Road Interchange
- Transit Signal Priority on Grand Avenue in Oakland
- WestCAT Facility Upgrade
- AC Transit Facility Upgrade

Other Potential Capital Funding Not Assumed

A number of the capital projects in this study align well with the eligible uses for a variety of state and federal grant programs that support transit, but the amount and timing of funding is often difficult to estimate in advance. In particular, capital grants are often awarded via competitive programs that review applications on an annual or biennial cycle, and it is virtually impossible to predict how the projects from this study would fare relative to other potential applicants for the same round of funding. Although the financial model does not portray any revenues

from these sources, project sponsors should diligently pursue grants from the programs below in order to help complete the capital funding portfolio:

- **Transit and Intercity Rail Capital Program (TIRCP)** – This competitive grant program is a formally defined part of the California Greenhouse Gas Reduction Fund (GGRF) that invests the proceeds of the state's cap-and-trade auctions. The program primarily funds projects in passenger-serving intercity rail corridors to help relieve congestion and reduce vehicle emissions. Eligible uses of funds include projects that improve connections between intercity rail and local transit, which could include express bus projects and services that facilitate connections to Capital Corridor stations, which in the vicinity of the proposed express bus routes include Richmond, Jack London Square, Emeryville, and a potential future station in Hercules.
- **Local Partnership Program (LPP)** – This program was created as part of the Road Repair and Accountability Act of 2017 (also known as Senate Bill 1 or SB1). Through separate formulaic and competitive program components, it provides funding to local agencies, including transit operators like AC Transit and WestCAT, to support a variety of transportation improvement projects. The formula component apportions revenues to recipients based on the volume of locally-generated funding sources (sales taxes, bridge, tolls, etc.) and population. The competitive program awards funds based on how well a candidate project meets defined goals such as improvements in air quality and reduction in vehicle miles traveled (VMT).
- **Solutions for Congested Corridors Program (SCCP)** – This competitive grant program was also created as part of SB1. It focuses on supporting infrastructure projects that are part of comprehensive corridor programs to improve overall travel efficiency on all modes in a pre-defined corridor. The projects typically emerge from multi-agency planning efforts and are scored on how well they meet program goals such as improved safety and reduced congestion. The recommendations from the Plan should be incorporated into future I-80 and I-580 corridor analyses to qualify them for SCCP funding.
- **State Transportation Improvement Program (STIP)** – This existing funding program was significantly augmented by SB1. Transit projects are eligible for funding, and project sponsors submit their proposed projects to the California Transportation Commission via MTC on a biennial basis. Because of competing regional priorities, it is not possible to confirm in advance which projects will receive the strongest backing in a given cycle.
- **Zero Emission Bus Funding** – In December 2018, the California Air Resources Board (CARB) approved the Innovative Clean Transit (ICT) Regulation, which requires that all transit operators in California transition to a Zero-Emission Bus (ZEB) fleet by the year 2040. There are a variety of funding sources that can support the cost of fleet upgrades and replacements. In addition to programs discussed elsewhere in this document, CARB has highlighted funding options such as the Carl Moyer Program, the Volkswagen Environmental Mitigation Trust, and the Legislature's recent GGRF allocations in support of the implementation of AB617 in disadvantaged communities. CARB's Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) may also be an option in future years, although it is currently over-subscribed. Funding from these programs could potentially be used for future bus purchases.
- **FTA 5339: Bus & Bus Facilities** – This is one of several Federal Transit Administration grant programs that supports construction and operations of public transit around the country. Section 5339 funds are awarded through both a formula allocation and a competitive program in order to rehabilitate or acquire buses and related equipment and facilities, including upgrades to low or no-emission buses and facilities. The formula portion of funding includes a fixed component and a component based on population and service factors; the incremental allocation to these new routes because of the increased service would likely be very small, so it was not estimated in the financial analysis. The competitive portion is awarded based on asset age and condition and vehicle emissions profiles.

- **West County Subregional Transportation Mitigation Program (STMP)** - Contra Costa County Measure J requires that local jurisdictions develop a program of regional traffic mitigation fees, assessments, or other mitigations, as appropriate, to fund regional and subregional transportation projects, including projects that support transit service. WCCTAC updated the West County STMP in early 2019 and included projects supporting express bus as identified in the High Capacity Transit Study. The STMP is therefore currently collecting funds that could be used for express bus improvements and can be further updated in a future update cycle to reflect the projects included in this Plan. In the 2019 update, based on a nexus study completed by WCCTAC, the STMP was limited to collecting 19% of the total project cost of projects included. This would result in up to $20 Million collected for express bus improvements through the program. Money raised by the STMP is dependent on development that would incur STMP fees and therefore the timing and amount to be collected by the STMP is not known. However, it would be a potential local funding source for the capital projects in this Plan.

Additional Operating Sources

State Funding

Several existing California programs fund transit operations through allocations that are based, in part, on a transit operator's relative share of overall fare revenues in the state. As a result, the addition of new transit service can trigger some incremental revenue allocations due to the new passengers and fares they generate. The financial analysis includes estimates of incremental revenues that could be available from the following two programs:

- **TDA State Transit Assistance** – The 1971 Transportation Development Act (TDA) created a new revenue sources knows as State Transit Assistance (STA) by imposing sales taxes on the sale of diesel fuel and allocated the resulting funds to public transit operators throughout California. The taxes are distributed in two components: a population-based allocation and a revenue-based allocation. The population-based allocation is typically distributed through a regional agency such as MTC, so claims on the funds are highly indirect; this component was not estimated within the financial analysis. The revenue-based allocation is made directly to the transit operators. To compute the amount that could be awarded to WestCAT and AC Transit because of the newly operating routes, historical data on statewide revenue-based allocations was used to develop a scaling factor of cents received per dollar of fare revenue in the most recent fiscal year. This was multiplied by the fare revenues anticipated to be generated by each of the new express bus routes to estimate potential future grant awards.
- **Low Carbon Transit Operations Program (LCTOP)** – This formula grant program is a formally defined part of the Greenhouse Gas Reduction Fund (GGRF). The allocations to each transit operator are made using the same formulas as the TDA-STA funds described above, with both population-based and revenue-based components. For the purposes of the financial analysis, the population-based component was not included, and the revenue-based component was estimated using the same scaling factor approach as for STA.

The scaling factor approach described above assumes that the state will generate enough revenues through each funding mechanism (diesel taxes for STA and cap-and-trade proceeds for LCTOP) to be able to award similar total funding levels to transit operators in the future and keep pace with inflation. It also assumes that the relative growth and distribution of fare revenues generated at different transit agencies around the state does not change so significantly as to tilt the apportionments away from WestCAT or AC Transit over time. For reference, last year's STA revenue-based awards were about five times the size of the LCTOP revenue-based awards. The population-based components of each of these two funding sources are discussed further later in this section.

Federal Funding

The Federal Transit Administration provides federal funding to public transit operators throughout the country via the Section 5307 program of Urbanized Area Formula Grants. The allocation formula has different components for different sized metro areas, including components based on population and service level factors. The population-based components are discussed further later in this section. The service level component was included in the financial analysis using a scaling factor approach. Specifically, historical data for the most recent federal fiscal year apportionments were used to calculate the number of cents received for each revenue mile of service, and this was applied to the proposed operating plan to make a proxy estimate of the federal revenues that might flow to the Bay Area (and ultimately to WestCAT and AC Transit) because of the added service operated for each of the proposed express bus routes.

This scaling factor approach assumes that Congress will continue to appropriate comparable levels of funding to the FTA 5307 program in future years, that funding levels will keep pace with inflation, and that peer agencies around the country grow their service levels in a relatively similar distribution as the present day, so that allocations do not tilt away from WestCAT and AC Transit over time.

Other Potential Operating Funding Not Assumed

As with transit capital funding, there are a number of funding sources for transit operating needs that are challenging to estimate in the context of a planning study. Many transit funding sources make allocations on the basis of demographic and economic variables such as population or sales tax return-to-source, which have little relationship to the service itself. The funds are often awarded to local and regional entities who must consider how to support a variety of needs and uses across the route network or even the entire region. Although the addition of new service will not necessarily trigger an incremental funding allocation to the specific route or transit operator, the new express bus services are eligible for and should request operating support from any or all of the following sources:

- **TDA Local Transportation Fund** – The 1971 Transportation Development Act (TDA) created a new revenue source known as the Local Transportation Fund (LTF) by imposing a quarter-cent sales tax increase statewide and returning that money to local agencies for the specific purpose of funding transportation improvements. In urban areas, transit-related needs often have a priority claim on these funds, but monies are not directly allocated to individual operators or routes; funding decisions are typically made at the county level, and the needs of new services will need to be balanced against other priorities.
- **TDA-STA Population-Based Funding** and **GGRF LCTOP Population-Based Funding** – As noted above, both the STA program and the LCTOP include population-based allocations that are typically awarded to regional planning entities such as MTC who then develops a sub-allocation methodology to satisfy the many competing needs of transit in the region. Although it is highly likely that additional STA and LCTOP funding will flow to WestCAT and AC Transit over time, it is premature to estimate what portion of the incremental funds would be available to support the new express bus routes.
- **FTA Section 5307 Urbanized Area Allocation** – As noted above, the FTA awards grants to support public transit service on the basis of both population and service level factors. In particular, FTA's Section 5307 includes components based on relative population as well as population density. These funds are typically allocated at the regional level, so MTC will determine further sub-allocation priorities for these funds.

DEVELOPMENT OF FINANCIAL MODEL

Description of Model Inputs

The process used to develop the proposed express bus routes ultimately resulted in two distinct phases of implementation ("near-term" vs. "long-term"). Specifically, the Project Management Team collaboratively defined a network of eight bus routes (1 to 8) plus two alternative routes (2A and 2B) together with a detailed list of capital projects that would be needed to support these routes. After consultation with stakeholders and key partners, the routes were grouped into near-term (2, 4, 6, 7) and long-term (1, 3, 5, 8), and the capital projects were grouped by their different priority levels ("required" vs. "optimal"). These determinations were based primarily on the technical feasibility of each of the routes when considering potential passenger demand and operational constraints, and the financial analysis took these groupings as givens. The financial model was structured to be able to separately analyze multiple groupings of routes so as to evaluate which combinations of routes and projects would be financially feasible within the envelope of known funding sources.

Project List and Capital Costs

As noted above, each of the recommended capital projects was labeled as either required or optimal in order to initiate express bus service and the route(s) that would benefit were noted. Capital projects labeled as required were those deemed necessary in order for the route to function (such as buses and stops) or those deemed necessary for the route to be financially viable (such as Mobility Hubs). All other capital projects were labeled as optimal. The financial model was created so that only those capital projects specifically relevant to the particular set of routes being evaluated would be included in the calculations.

Another key factor in determining financial feasibility is project eligibility. The local funding sources described in the previous section (RM3 and the CCTA TEP) include restrictions on which types of projects will be funded and where different funding sources can be spent. In particular, funds from one of the RM3 line items and all of the TEP cannot be spent on projects located in Alameda County, and a separate RM3 line item can only be spent on designated Rapid Bus corridors. To facilitate alignment of capital funding sources and uses, the capital project list was further segmented to reflect these two distinctions.

The consultant team developed estimates of the capital costs of each project in current dollars, including sub-totals for Environmental Analysis & Final Design Costs, Construction Costs, and Other Support Costs. Each project was also evaluated to determine the likely timing and duration of three implementation phases: Pre-Environmental, Environmental Clearance and Design, and Construction/Purchase. The timing of the phases is aligned to the operational start of the routes each project supports, according to the near-term vs. long-term designation. Based on these inputs, the financial model aligns the costs and development timing as follows:

- Environmental Analysis & Final Design Costs were distributed evenly across all years of the Environmental Clearance and Design phase.
- Construction Costs were distributed evenly across all years of the Construction/Purchase phase.
- Other Support Costs were distributed evenly across all years of implementation, regardless of the number of years for each phase.

Route List and Operating Cost

Two route groupings were analyzed in the financial model. The first grouping includes only the near-term routes, and the second grouping includes near-term routes plus the long-term routes, with the long-term routes deployed about four years after service begins on the near-term routes. Regardless of whether the long-term routes were included in the analysis, Route 2 (a near-term route) was converted to two separate routes, known as Route 2A and Route 2B, in Year 10 of the implementation plan, which would be the eighth year of actual bus operations.

The financial plan incorporates inputs based on a detailed operations plan for the proposed routes, reflecting peak-only service that targets morning and evening commuters. The routes are currently assumed to operate in revenue service in the peak-direction only, but reverse commute service could be implemented with minimal ramifications to the analysis. Midday service could be added later as demand builds in each market, but this is not currently included in the model.

Based on these operating assumptions, the consultant team developed an operating plan for each route including calculations of vehicle hours and revenue miles, fleet requirements, and estimated annual operating costs. Operating costs were calculated by multiplying the operating cost per total vehicle hour provided by each transit operator by the total vehicle hours scheduled for each route. More information about these calculations is available in the Proposed Service Plan.

For the purposes of the financial analysis, it was assumed that the annual operating costs would grow in line with inflation over time. This is a somewhat optimistic assumption, because cost growth from year to year can be uneven due to periodic labor negotiations and changes in route networks and support facilities. This is balanced by a conservative estimation of the marginal operating cost by each agency.

In addition to the cost of operating the actual bus routes, the new infrastructure being constructed to support the bus routes will require some periodic operation and maintenance. Through consultation with the Project Management Team, the following assumptions were developed for the financial analysis:

- The cost to maintain all freeway assets would be the responsibility of Caltrans
- The cost of operating and maintaining new and expanded facilities at transit centers and mobility hubs would be covered by user fees charged for parking and ancillary services. Thus, user fees were conservatively not included as potential operations funding source.
- The cost to maintain new bus stops is included in the assumed hourly operating cost for each transit agency.
- The cost to maintain transit signal priority equipment is borne by each jurisdiction as part of routine traffic signal maintenance.
- The overhead cost for the new maintenance facilities needed to launch the new routes is included in the hourly operating cost for each transit agency.

Operating Revenues

The operation of the express bus routes will generate revenues from passenger fares that can be applied towards the cost of the new service. The consultant team developed a range estimate of annual passenger boardings and the associated fare revenues for each route, reflecting current land use and mode choice patterns, a conservative assumption given that the service area includes multiple Priority Development Areas. Additionally, the forecast assumes existing congested travel times due to the uncertainty of the timing and magnitude of benefit associated with proposed transit priority treatments. This may result in a conservative estimate of potential ridership. It also results in a conservative estimate of total operating hours (and operating costs), potentially offset by continued background growth in congestion and reduction in operating speeds.

For the purposes of the financial analysis, the low-end of the fare revenue estimate was used as a conservative assumption. The fare revenue forecast was a single year point estimate and did not include any adjustments over time to account for the fare increase policies of the transit operators. Based on consultation with the Project Management Team, the financial model assumes that fare revenues will grow in line with inflation, anticipated to

result from the combined effect of periodic fare increases and modal shift resulting from the increased cost competitiveness of transit.

As noted above, the new and expanded transit centers and mobility hubs proposed in the capital project list are assumed to charge user fees in order to cover the operating and maintenance costs of the fixed facilities. This could come from daily parking charges or other revenue-producing services, such as bike share or retail operations. It is assumed that all of these revenues would be necessary to off-set operating and rehabilitation costs, and that no incremental user fees will be available to support vehicle operations. This is a conservative assumption given the current financial performance of the Hercules Transit Center.

Non-Operating Funding

The final input to the financial analysis was the determination of non-operating funding available to cover the capital and operating costs from the express bus routes. The financial model specifically calculates the amounts available based on the particular subset of routes and projects in a given scenario, based on the eligibility restrictions for each source. The list of non-operating funding sources that were formally estimated in the calculations includes the following:

- MTC Regional Measure 3
- CCTA Transportation Expenditure Plan
- TDA State Transit Assistance (revenue portion)
- GGRF Low Carbon Transportation Operations Program (revenue portion)
- FTA 5307 Urbanized Area Program (revenue miles portion)
- Hercules TIF

Although a number of other funding sources described in the previous section would likely be available to augment this list, they were not included in the analysis at this time, due to the difficulty in estimating the exact timing and amount of funding that could be expected to flow to the express bus routes. Using a more conservative list of available funding also helps to clarify the most feasible paths for deploying the routes over time should the funding change sometime after implementation is underway.

Key Assumptions in Financial Model

Model Timeframe

The financial model is a ten-year composite calculation of costs and revenues, with separate calculations for capital and operating needs. Results are presented in year of expenditure dollars (YOE$), so the exact timing of when projects are developed and routes are deployed affects the calculations.

As noted in the section on available funding sources, several of the largest dedicated revenue sources intended to support the express bus routes have uncertainties related to the timing of when funds would be available. In particular, the CCTA TEP requires voter approval of a forthcoming ballot measure and Regional Measure 3 is currently being challenged in court. It is assumed that implementation of the express bus routes would not begin until at least one, and likely both, of these two sources is accessible to the project partners. As a baseline input, the financial model assumes that any available funds from these sources would be released at the beginning of FY 2021-22. If monies are available sooner, project work could begin earlier as well, and costs would be marginally lower than shown in the current model; if funding is delayed and implementation is deferred, then costs would escalate.

Inflation and Cost Growth Over Time

Converting the various cost and revenue estimates into year of expenditure dollars requires a variety of assumptions about how those figures change over time. A baseline rate of 3.5% per year was used to represent background inflation effects, based on the long-term trend in the consumer price index (CPI). Relative to this underlying trend, the financial model makes the following assumptions:

- Construction costs for all projects are assumed to grow in line with inflation. This is somewhat optimistic compared to the recent past, given the overall strength of the regional economy in the Bay Area. However growth in the real estate sector appears to be slowing, so cost growth may also return to a more typical level within the ten-year horizon.
- Operating costs and fare revenues for all routes are assumed to grow in line with inflation, as discussed in the previous section on model inputs.
- Revenues derived from on-going state and federal grant programs are assumed to grow in line with inflation, either because these programs are explicitly tied to the economy (e.g., TDA STA is derived from sales taxes) or because elected officials tend to increase annual budgets to reflect increasing infrastructure needs (e.g., FTA 5307 is part of an annual appropriations process at the federal level). Admittedly there can be financial downturns and political pressures that will keep revenues somewhat below the natural CPI rate, but this simplifying assumption provides an order of magnitude result appropriate for a short time-frame analysis.
- As described above in the funding section, neither the RM3 funds nor the TEP funds growth with inflation, due to the fixed nature of their voter-approved fiscal programs.

It should be noted that this financial analysis does not include future costs associated with the renewal and replacement of major assets including transit vehicles and fixed facilities in transit centers and mobility hubs. The buses will require a mid-life overhaul followed by a full replacement at the end of their useful life, which is typically about twenty years; the fixed facilities will need periodic upgrades and re-builds over the course of the next several decades. Long-term planning for sustainable operations of these express bus routes beyond the ten-year horizon will need to consider funding needs for these lump sum capital costs.

RESULTS OF FINANCIAL MODEL

The Project Management Team requested a financial analysis of two separate funding scenarios: one in which only RM3 would be available (without the CCTA TEP) and another where both RM3 and the TEP were utilized.

RM3-Only Scenario

A scenario that relies primarily on funding from RM3 is unlikely to be both technically and financially viable. By itself, RM3 provides only $12.5M in guaranteed funding for express bus capital projects and an estimated $5M per year in operating funding. New buses cost about $1 million each in current dollars, and each of the routes in the plan requires between 7 and 10 vehicles, which would consume most of the available capital funds even for just one route. The required capital projects would need to be less than the balance of available RM3 funding in order to be viable with RM3 alone.

The route with the smallest total funding requirements is Route 1. It requires a fleet of 7 buses and less than $1 million in capital projects to launch, and its operating costs would be less than $1 million per year in current dollars. However, this route was slated for the long-term implementation phase for technical reasons, and may not be a fit for immediate deployment.

Route 2 requires 10 vehicles, but it could also be launched within the available funding capacity. However, this route relies on existing fully- or over-subscribed Transit Centers in Hercules and Richmond. Additional capital funding would be desired to increase the multi-modal accessibility of those facilities prior to introducing new service. Additionally, identified capital projects to enhance transit travel time competitiveness would be particularly valuable for the effectiveness of this route. The bus purchase and stop upgrades required for this route would consume the entirety of the available capital budget in RM3, leaving no funding for these additional needs. Therefore, this route alone would not result in a desirable implementation scenario.

Routes 3 through 8 each requires either a mobility hub or a freeway-related project (or both) and the capital costs would exceed the available capital resources. It appears to be the case that if the CCTA TEP does not pass, additional funding would have to be secured in order to launch any express bus routes in West County within the next five years.

RM3 + TEP Scenario

The RM3 + TEP scenario is financially viable under certain conditions. The TEP provides a significant boost to the capital funding capacity, which would be sufficient to fund all of the required projects necessary to launch the near-term routes, together with the operating costs through the first ten years of implementation. This scenario is described in more detail below, followed by a discussion of trade-offs to consider when expanding to more projects and routes beyond this narrow set.

Near-Term Routes + Required Projects

The committed funding available from RM3 and the TEP is sufficient to construct all of the required projects for the four near term routes (2, 4, 6, and 7) and fund their operations for the ten-year operating plan.

The near-term routes require $63 million (YOE$) in capital projects including:

- $19 million for buses for AC Transit
- $33 million for buses for WestCAT[2]
- $11 million in required capital projects[3]

About one fifth of the total capital cost is funded from RM3 and the balance is funded with the TEP. More specifically, the financial analysis assumes that nearly $14 million in RM3 money would be made available to the project through a combination of $12.5 million from the dedicated express bus line items plus up to $1.2 million from the Rapid Bus line item. About $49 million in capital costs would be funded from the dedicated TEP line item for the express bus services, leaving a balance $41 million in that line item for other expenditures in this particular scenario. A summary of the ten-year capital outlook is provided in Figure 1 at the end of this memo.

The operating cost for the four near-term routes is $5.4 million in current dollars. This figure increases to $6.4 million in current dollars when the conversion from Route 2 to Routes 2A and 2B is implemented. In Year of Expenditure dollars, the total operating expenses over the ten-year implementation plan are just above $59 million. About $15.6 million of the total operating expense is covered by fare revenues, with majority of the

[2] This total includes the cost of eight additional buses needed to convert Route 2 into Routes 2A and 2B in Year 10 of the implementation plan.
[3] This total includes the Bissell Avenue Mobility Hub, the Tara Hills Drive Mobility Hub, and all required bus stops for the near-term routes.

balance coming from the RM3 operating funds and a modest contribution from state and federal grant programs like TDA-STA and FTA 5307.

It should be noted that in Year 8 of the implementation plan, the operating expenses increase to the point that the required RM3 funding contribution would hit the assumed $5 million cap. The funding plan contemplates that additional operating contributions would come from the CCTA TEP to fill the gap. A summary of the ten-year operating outlook is provided in Figure 2 at the end of this memo.

Funding Trade-Offs

After confirming that the near-term routes could be launched with available funding, the financial model was used to explore additional options for utilizing balance of the dedicated TEP funds. As the number of routes and capital projects was increased, each of the deployment options typically resulted in some deficits in capital and/or operating funds.

As described above, the routes were grouped into near-term and long-term and the capital projects were designated as required or optimal, which naturally leads to a core trade-off to consider. After building the required projects for the near-term routes, WCCTAC could proceed in one of two directions as the next step:

- **Option 1: build the required projects to launch the long-term routes** – This approach assumes that the goal is to put as much new service on the street as quickly as possible and relies on the minimum required improvements to support the full network of routes. At full build-out, it would require a fleet of 74 vehicles to operate Routes 1-8 through Year 9 with the transition from Route 2 to Routes 2A and 2B in Year 10. When combined with the required projects for the near-term routes, the total capital cost is $139 million (YOE$) with a capital funding gap of $35 million. The total operating expense is $90 million (YOE$) with an operating funding gap of $26 million. Operating deficits begin as soon as the long-term phase routes are deployed.
- **Option 2: build the optimal projects to enhance near-term routes** – This approach assumes that the goal is to provide high quality service on a few routes, and it defers deployment of the long-term phase routes until additional funding can be secured. At full build-out, it would require a fleet of 41 vehicles to operate Routes 2, 4, 6, and 7 through Year 9 with the transition from Route 2 to Routes 2A and 2B in Year 10. When combined with the required projects for the near-term routes, the total capital cost is $168 million (YOE$) with a capital funding gap of $60 million. The total operating expense is $59 million (YOE$) with an operating funding gap of $3 million. Operating deficits begin in Year 8, because the additional capital projects will have consumed all of the dedicated funding in the TEP, leaving no buffer for operating expenses when the $5 million from RM3 is fully utilized.

As currently configured, the available funds are insufficient to pursue either of these options in their entirety, but the differences between them highlight a key trade-off between the two scenarios. Specifically, launching all routes under Option 1 requires far more operating funds than have currently been secured for the Plan, but the operating funding gap is relatively small for Option 2, suggesting that securing additional one-time capital grants and a modest stream of operating funding could be sufficient to make this option financially feasible.

Each of the two options above assumes full implementation all of the projects in the respective category. A third option to consider would be to launch the long-term routes individually based on funding capacity:

- **Option 3: build the required projects to launch one long-term route** – This approach is a more modest version of service expansion than Option 1. Most of the long-term routes have relatively modest lists of required projects, so any single route would fit within the available funding envelope. For example:

- Two of the long-term routes (Routes 1 and 3) do not have any additional required infrastructure projects beyond those that would already be in place for the near-term routes, so the only additional expenses would be the cost of new buses and annual operations; Route 1 is the least expensive of the two. At full build-out, this option would require a fleet of 48 vehicles to operate Routes 1, 2, 4, 6, and 7 through Year 9 with the transition from Route 2 to Routes 2A and 2B in Year 10. When combined with the required projects for the near-term routes, the total capital cost is $71 million (YOE$) and the total operating expense is $65 million (YOE$) with no funding gap for either capital or operating. The assumed $5 million in RM3 operating funding would be fully utilized during Year 7, the fifth year of bus operations; a total of $6 million in operating contributions would come from the dedicated funding in the TEP between Year 7 and Year 10.
- Another possibility would be to build the Wright Avenue Mobility Hub and launch Route 8. At full build-out, this option would require a fleet of 49 vehicles to operate Routes 2, 4, 6, 7, and 8 through Year 9 with the transition from Route 2 to Routes 2A and 2B in Year 10. When combined with the required projects for the near-term routes, the total capital cost is $90 million (YOE$) and the total operating expense is $68 million (YOE$) with no funding gap for either capital or operating. The assumed $5 million in RM3 operating funding would be fully utilized during Year 7, the fifth year of bus operations; a total of $11 million in operating contributions would come from the dedicated funding in the TEP between Year 7 and Year 10.

After discussion of all of the options described above, the Project Management Team supported the concept of making the near-term routes as effective and desirable as possible as opposed to implementing as many routes as possible, an approach most aligned with Option 2. The capital and operating outlook for the full build-out of Option 2 are portrayed in Figure 3 and Figure 4, respectively, at the end of this memo.

It should be noted that more than half of the total capital cost for Option 2 is related to just three passenger facilities: the expansions of the two transit centers at Hercules and Richmond Parkway and the second site at the Tara Hills Drive Mobility Hub. These three projects have a combined cost of almost $96 million (YOE$), which dominates the list of optimal projects for the near-term routes. A portion of the $41 million in remaining TEP funding could be used as local match to help secure additional capital funding to complete these projects. Alternatively, the funds could be used to advance interim improvements at these sites until a larger funding package could be developed.

Recommendations and Next Steps

Prepare to Launch Near-Term Routes

Based on the analysis described above, the near-term routes are feasible and should be implemented as soon as both RM3 and the TEP funds are made available. The required projects for these routes can be built immediately with available funds, and even some of the optimal projects can be pursued right away while additional funding is identified to complete the full funding package needed to construct the transit center expansions and new mobility hub facilities. If all TEP funds will be pledged towards capital costs for facilities projects, additional operating funds will be needed within the ten-year horizon of the plan. Or, if WCCTAC prefers to use the remaining TEP funding to support operating costs, then an even higher level of capital funding would be the priority.

Based on consultation among members of the Project Management Team, it was determined that operating funds will be allocated directly to each of the transit agencies each year, similar to the mechanism currently in use for CCTA's existing Measure J. Operators could choose to allocate additional funds from their other resources to

augment the express bus services beyond the service levels contemplated in this plan, but that has not been assumed here.

Pursue Additional Funding

Regardless of the particular sequence of projects that are funding from committed sources, it is clear that additional funding is necessary to realize the full-scale implementation of all express bus routes proposed in this plan. The projects in this plan are likely to be highly competitive in future grant application cycles, and project sponsors should pursue funding from multiple additional sources including:

- GGRF Transit and Intercity Rail Capital Program (TIRCP)
- Local Partnership Program (LPP)
- Solutions for Congested Corridors Program (SCCP)
- State Transit Improvement Program (STIP)
- Zero-Emission Bus Funding
- FTA Section 5339: Bus & Bus Facilities

Figure 1 Summary of Ten-Year Capital Outlook: RM3 + TEP Funding Scenario, Required Projects for Near-Term Routes

	Year 1 FY 2021-22	*Year 2* FY 2022-23	*Year 3* FY 2023-24	*Year 4* FY 2024-25	*Year 5* FY 2025-26	*Year 6* FY 2026-27	*Year 7* FY 2027-28	*Year 8* FY 2028-29	*Year 9* FY 2029-30	*Year 10* FY 2030-31	10-Year TOTAL
CAPITAL EXPENSES											
Buses for AC Transit	$9.4	$9.8	-	-	-	-	-	-	-	-	**$19.2**
Buses for WestCAT	$10.5	$10.9	-	-	-	-	-	$5.6	$5.8	-	**$32.9**
Required Improvements	$1.4	$9.5	-	-	-	-	-	-	-	-	**$10.9**
Optimal Improvements	-	-	-	-	-	-	-	-	-	-	**-**
TOTAL CAPITAL EXPENSES	**$21.4**	**$30.1**	**-**	**-**	**-**	**-**	**-**	**$5.6**	**$5.8**	**-**	**$63.0**
CAPITAL REVENUES											
CCTA TEP	$15.0	$22.8	-	-	-	-	-	$5.6	$5.8	-	**$49.3**
RM3	$6.4	$7.3	-	-	-	-	-	-	-	-	**$13.7**
Hercules TIF	-	-	-	-	-	-	-	-	-	-	**-**
TOTAL CAPITAL REVENUES	$21.4	$30.1	-	-	-	-	-	$5.6	$5.8	-	**$63.0**
Capital Funding Shortfall, if any	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

1. Figures are in millions of Year of Expenditure dollars.
2. Fiscal Years run July through June.
3. Does not include any projects classified as "externally funded."

Figure 2 Summary of Ten-Year Operating Outlook -- RM3 + TEP Funding Scenario, Required Projects for Near-Term Routes

	Year 1 FY 2021-22	*Year 2* FY 2022-23	*Year 3* FY 2023-24	*Year 4* FY 2024-25	*Year 5* FY 2025-26	*Year 6* FY 2026-27	*Year 7* FY 2027-28	*Year 8* FY 2028-29	*Year 9* FY 2029-30	*Year 10* FY 2030-31	10-Year TOTAL
OPERATING EXPENSES											
Routes Operated by AC Transit	-	-	$3.7	$3.8	$4.0	$4.1	$4.2	$4.4	$4.5	$4.7	**$33.4**
Routes Operated by WestCAT	-	-	$2.7	$2.8	$2.9	$3.0	$3.1	$3.2	$3.3	$4.9	**$25.8**
TOTAL OPERATING EXPENSES	**-**	**-**	**$6.4**	**$6.6**	**$6.8**	**$7.1**	**$7.3**	**$7.6**	**$7.8**	**$9.6**	**$59.3**
OPERATING REVENUES											
Fares & User Fees	-	-	$1.8	$1.9	$1.9	$2.0	$2.1	$2.1	$2.2	$1.7	**$15.6**
CCTA TEP	-	-	-	-	-	-	-	$0.0	$0.2	$2.6	**$2.8**
RM3 Regional Express Bus	-	-	$4.2	$4.4	$4.5	$4.7	$4.9	$5.0	$5.0	$5.0	**$37.6**
TDA-STA	-	-	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1	**$1.0**
LCTOP	-	-	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	**$0.2**
FTA 5307	-	-	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2	$0.3	**$1.9**
TOTAL OPERATING REVENUES	**-**	**-**	**$6.4**	**$6.6**	**$6.8**	**$7.1**	**$7.3**	**$7.6**	**$7.8**	**$9.6**	**$59.3**
Operating Funding Shortfall, if any	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

1. Figures are in millions of Year of Expenditure dollars.
2. Fiscal Years run July through June.

Figure 3 Summary of Ten-Year Capital Outlook: RM3 + TEP Funding Scenario, Required+Optimal Projects for Near-Term Routes

	Year 1 FY 2021-22	Year 2 FY 2022-23	Year 3 FY 2023-24	Year 4 FY 2024-25	Year 5 FY 2025-26	Year 6 FY 2026-27	Year 7 FY 2027-28	Year 8 FY 2028-29	Year 9 FY 2029-30	Year 10 FY 2030-31	10-Year TOTAL
CAPITAL EXPENSES											
Buses for AC Transit	$9.4	$9.8	-	-	-	-	-	-	-	-	**$19.2**
Buses for WestCAT	$10.5	$10.9	-	-	-	-	-	$5.6	$5.8	-	**$32.9**
Required Improvements	$1.4	$9.5	-	-	-	-	-	-	-	-	**$10.9**
Optimal Improvements	$1.6	$9.4	$20.0	$49.8	$24.2	-	-	-	-	-	**$104.9**
TOTAL CAPITAL EXPENSES	**$22.9**	**$39.5**	**$20.0**	**$49.8**	**$24.2**	**-**	**-**	**$5.6**	**$5.8**	**-**	**$167.9**
CAPITAL REVENUES											
CCTA TEP	$16.3	$32.1	$20.0	$21.6	-	-	-	-	-	-	**$90.0**
RM3	$6.6	$7.6	-	-	-	-	-	-	-	-	**$14.2**
Hercules TIF	$0.1	$0.4	$0.4	$3.5	-	-	-	-	-	-	**$4.4**
TOTAL CAPITAL REVENUES	$23.0	$40.1	$20.4	$25.0	-	-	-	-	-	-	**$108.6**
Capital Funding Shortfall, if any	**$0.1**	**$0.6**	**$0.4**	**$(24.7)**	**$(24.2)**	**-**	**-**	**$(5.6)**	**$(5.8)**	**-**	**$(59.3)**

1. Figures are in millions of Year of Expenditure dollars.
2. Fiscal Years run July through June.
3. Does not include any projects classified as "externally funded."

Figure 4 Summary of Ten-Year Operating Outlook -- RM3 + TEP Funding Scenario, Required+Optimal Projects for Near-Term Routes

	Year 1 FY 2021-22	*Year 2* FY 2022-23	*Year 3* FY 2023-24	*Year 4* FY 2024-25	*Year 5* FY 2025-26	*Year 6* FY 2026-27	*Year 7* FY 2027-28	*Year 8* FY 2028-29	*Year 9* FY 2029-30	*Year 10* FY 2030-31	10-Year TOTAL
OPERATING EXPENSES											
Routes Operated by AC Transit	-	-	$3.7	$3.8	$4.0	$4.1	$4.2	$4.4	$4.5	$4.7	**$33.4**
Routes Operated by WestCAT	-	-	$2.7	$2.8	$2.9	$3.0	$3.1	$3.2	$3.3	$4.9	**$25.8**
TOTAL OPERATING EXPENSES	**-**	**-**	**$6.4**	**$6.6**	**$6.8**	**$7.1**	**$7.3**	**$7.6**	**$7.8**	**$9.6**	**$59.3**
OPERATING REVENUES											
Fares & User Fees	-	-	$1.8	$1.9	$1.9	$2.0	$2.1	$2.1	$2.2	$1.7	**$15.6**
CCTA TEP	-	-	-	-	-	-	-	-	-	-	**-**
RM3 Regional Express Bus	-	-	$4.2	$4.4	$4.5	$4.7	$4.9	$5.0	$5.0	$5.0	**$37.6**
TDA-STA	-	-	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1	**$1.0**
LCTOP	-	-	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	**$0.2**
FTA 5307	-	-	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2	$0.3	**$1.9**
TOTAL OPERATING REVENUES	-	-	$6.4	$6.6	$6.8	$7.1	$7.3	$7.5	$7.6	$7.1	**$56.4**
Operating Funding Shortfall, if any	-	-	-	-	-	-	-	$(0.0)	$(0.2)	$(2.6)	**$(2.8)**

1. Figures are in millions of Year of Expenditure dollars.
2. Fiscal Years run July through June.